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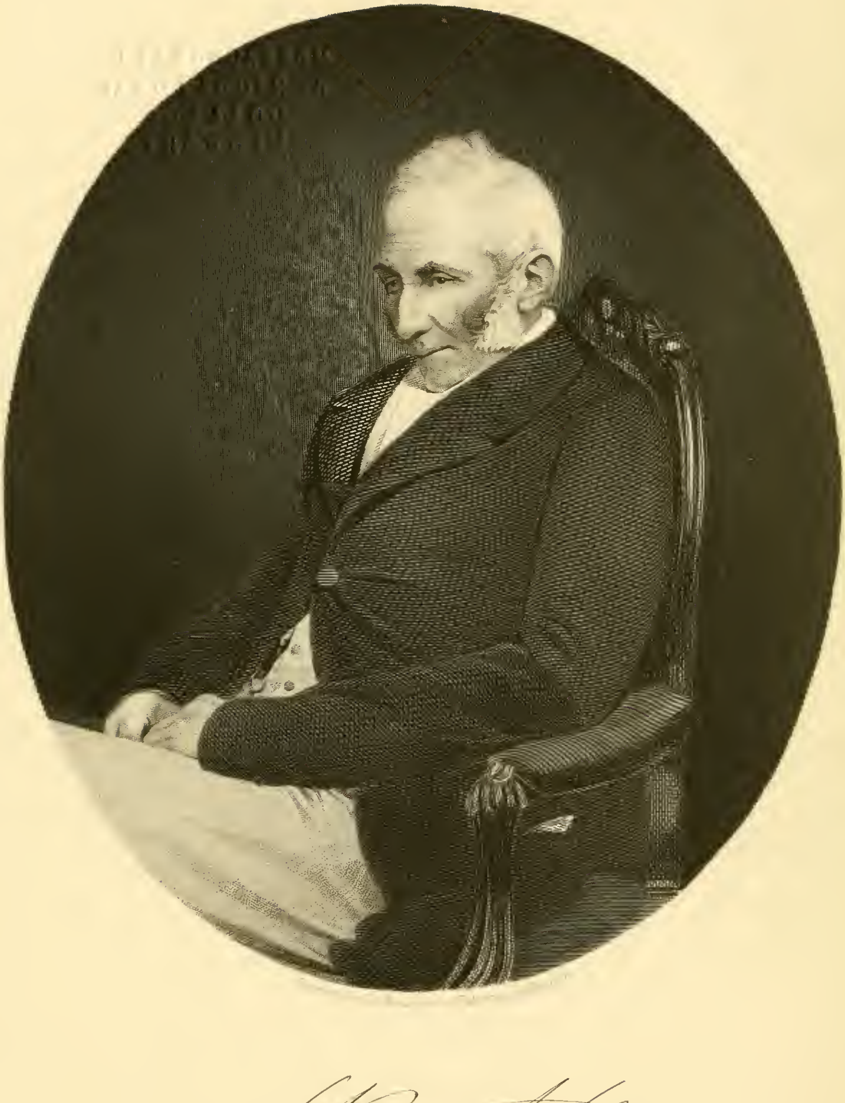

C Knightley

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(THIRD SERIES.)

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THE FARMER'S MAGAZINE.

JULY, 1856.

PLATE I.

PORTRAIT OF SIR CHARLES KNIGHTLEY, BART

ENGRAVED BY J. B. HUNT, FROM A TALBOTYPE, BY HENNAH.

PLATE II.

A SHORT-HORN OX,

BRED BY AND THE PROPERTY OF THE MOST HON. THE MARQUIS OF EXETER, OF BURGHLEY PARK, NEAR STAMFORD,

For which the first prize of Twenty-five Sovereigns and Gold and Silver Medals were awarded at the Smithfield Club Cattle Show, December, 1855.

SIR CHARLES KNIGHTLEY, BART.,

FAWSLEY PARK, NORTHAMPTONSHIRE.

The country-life, the country-homes, and, above all, the country-gentlemen of England, have long been to foreigners objects of envy and admiration, which they strive to imitate in vain. They are as well aware as we can be ourselves that our institutions owe much of their stability to these peculiar features of English society; but with all their anxiety to adopt the same habits and reap the same advantages, there is some ingredient wanting in the corresponding class of every other nation, which makes the English country gentleman stand alone, like one of the oaks in his own park, a rare specimen of native vigour, judicious cultivation, and advantageous position.

We should much like to walk one of our least-enthusiastic foreign friends through the park at Fawsley, the picturesque seat of Sir Charles Knightley, whose likeness so appropriately adorns the present number of our magazine. We should like to show him the magnificent old oaks, rich with the accumulated growth of centuries, and in this glorious summer-time spreading upwards in the sunlight into a perfect fairy-land of beauty—the undulating park dotted with deer, now clustering under some giant of the forest, now filing leisurely down to the calm bright water, only disturbed by the dip of a swallow, or the lazy plash of a half-gorged pike—the distant meadows rippled with new-mown hay, melting into the haze of a July noon, and the trim gardens and pleasure-grounds dark with evergreens or bright with flowers. If he be a poet or a painter (and nine men out of ten are one or other in their hearts, although, heaven be praised! the faculty seldom develops itself into colours or verse), he may drink in beauty till his eyes are dazzled and his brain swims—if he be an antiquarian and a historian, we will bring him to the fine old house, and fill him full of romantic records and soul-stirring memorials of the olden time. He has read of the Gunpowder

Plot; he has heard of Catesby and his comrades; nor is Guido Fawkes necessarily connected in his mind with a dislocated figure carried to and fro by a troop of shouting urchins on the Fifth of November. These bold conspirators used to meet at Fawsley, and the room is still in existence which enclosed that council of dark, desperate men. He is acquainted with the cause and progress of our great Rebellion, and Cavalier and Roundhead are no empty nicknames in his ear. The Knightleys of the seventeenth century were then stout partizans of liberty, as they have since been staunch supporters of the throne. The history of the family would fill a volume; the stock has always been good—its scions *sans peur et sans reproche*, and the present baronet is no unworthy representative of his race.

Sir Charles Knightley was born Anno Domin 1781, and is consequently now in his 76th year; a fact which will scarcely be credited by those who witness his still graceful seat and pliant figure as he canters along on a thorough-bred hack to inspect his farm or visit his tenantry, at seven o'clock on a cold winter's morning. These early hours, added to temperate habits and constant out-of-door exercise, have probably been the means of preserving intact his excellent constitution up to an advanced period of life. He received the usual education of an English gentleman, passing from Rugby to Christ Church, Oxford, in the customary manner; a process of hardening first, and polishing afterwards, which best fits the stone for its setting in after-life. But Sir Charles was not of the stuff which settles quietly down into a mere drone in the hive: he inherited the mettle of his ancestors; and when our country was threatened with invasion in the year of panic 1801, we find him joining the militia, and doing duty with that force until all fear of aggression from our unruly neighbours had passed away.

In those days, as now, fox-hunting was the favourite pastime—nay, with the young almost the engrossing business of the winter months; and Sir Charles was too well situated for its pleasures, not to become an ardent votary of the chase. He was young, spirited, full of energy, and a brilliant rider; for many years Northamptonshire rung with the daring feats and excellent horsemanship of the famous Knightley "*Vixère fortes ante Agamemnona;*" we do not mean to assert that both before and after his time there have not been many sportsmen distinguished for their performances over a country; but we do maintain that amongst Sir Charles Knightley's contemporaries we find the majority of those names which we have always been taught to consider the ornaments of the hunting-field. Lord Jersey, Messrs. Assheton Smith, Musters, Cholmondeley, Cooke, Lindow Germaine, and a host of first-flight men, were in the constant habit of meeting each other, either with the Quorn or Pytchley hounds; and in those days, as now, the chivalry of the shires were ever ready to bring science, skill, and daring into play, for the avowed object of "being in the same field with the hounds," and the inward motive of going "a turn better than their neighbours." We have always heard that the Northamptonshire baronet was second to none; nay, on more than one occasion, and even when *not* mounted on Benvolio, "all alone in his glory."

Of this famous hunter, avowedly the best Sir Charles ever owned, we must say a few words. Like his master, he was quite thorough-bred; but unlike the man, the horse seems only to have had an *acquired* taste for hunting, and to have shown, on his first introduction to the chase, a very determined antipathy to following hounds. Patience and good usage, however, will succeed when all else fails, particularly with a well-bred one. Sir Charles took the young horse out by himself one fine morning, when living at the famous club at Pytchley, and endeavoured to bring him to reason —in vain; stock still he stood; no power could induce him to jump a fence. The rider came home to luncheon somewhat disgusted, but not discouraged. After a glass of Madeira, he brought him out again, still patient, good-tempered, and persevering. The animal, that would have resisted coercion to the death, was subdued by kindness; and from that day Benvolio became, perhaps, the most brilliant hunter in England. Of his jumping powers we need only say that Sir Charles was seen on one occasion to ride him over a *locked* six-barred gate, on to a canal-bridge, and over the corresponding gate which was *not* locked, into the field beyond. It was also on this horse, if we mistake not, that he cleared the surprising distance of thirty-one feet, over a fence and brook, just below Brixworth Hill, at a spot which has ever since gone by the name of "*Knightley's leap.*" We ourselves know the place well, and, even on a second Benvolio, honestly confess no power on earth would induce us to ride at it.

As a master of hounds, Sir Charles is so well known to the sporting world, that it is needless to enter into any particulars as to his system, his establishment, or the excellent sport he showed. Amongst his contemporaries, he was thought to breed his hounds a little too fine; but Sir Charles loved *pace*, and his knowledge of animal nature led him to pay a just and unvarying tribute to *blood*. No man has perhaps been so successful in breeding first-class animals of every description; and his late sale of short-horns at Fawsley, realizing the sum of £6,163 10s., proves that his method was a successful one, and that in every particular he went the right way to work.

As time stole on, and middle age, though it left the eye as light, the form as lithe and vigorous as ever, damped somewhat the redundant spirits, and subdued as it matured the tastes of manhood, Sir Charles bid adieu to the hunting field, deeply to the regret of his brother-sportsmen, and devoted his time and attention more assiduously to agricultural pursuits, a taste to which he has ever since been most constant. Popular as he is, and beloved by high and low, perhaps amongst the farmers of Northamptonshire more than any other class, Sir Charles enjoys the reputation of being a perfect oracle. He has done more for agriculture in that district than any man now living, and is respected and admired accordingly. Engrossing, however, as is the pursuit of farming, it never seduced this thorough English gentleman to waver for an instant from the duties of his high position; and even in the shades of wooded Fawsley, and the peaceful joys of a happy domestic hearth and an extended circle of friends, his attention was not to be distracted from the stirring events of the great political world. During the reform agitation of 1831, when the coming bill so disorganised the whole fabric of English society, it was resolved by the late Lord Spencer, and the present Lord Fitzwilliam, to oust the late Mr. Cartwright from the representation of the whole county of Northampton. Sir Charles came boldly to the rescue, stood by the side of his old friend, and kept the poll open for thirteen days, but without success. In 1834, he was returned without opposition for the Southern Division of Northamptonshire, for which he sat till 1852, when he retired in favour of his son, Mr. Rainald Knightley—a gentleman who, in addition to a cultivated intellect and literary taste, inherits his father's popularity, and his happy knack of *stealing over a country in a quick thing.* Notwithstanding the stirring and busy life led by Sir Charles Knightley, Time has indeed dealt very lightly with him, both in person and spirits. As the poet says, he has just brushed him with his wing, and so passed by. To this day his habits are as active, his mind as keen, and his energy as untiring as in the morning prime of youth. Even now the personal advantages, for which as a young man he was so remarkable, are but chastened by the lapse of years. He is still one of the finest horsemen that ever got into a saddle—hand, seat, and nerve are all admirable; and although he has for many seasons discontinued the practice of following hounds, he is still to be seen, on some fine winter's morning, eagerly watching the merry pack as they wind their fox through the famous holding covert of Badby Wood, his own property, and, as may easily be conceived with such an owner, a *certain find.* There are but few left of the comrades of his youth; and the once-famous Pytchley Club, of which he was so long an ornament, in the days of the late Lord Spencer, Mr. Bouverie, and Mr. Cooke, is now completely broken up. The two latter gentlemen are still alive and flourishing; nor has the memory of Mr. Cooke's famous horse Lancet, bought by him of Mr. Nethercote (a brother member), for the handsome figure of seven hundred guineas, yet entirely died out in the memory of the sportsmen of Northamptonshire; but, with the exception of the gentlemen we have named, and one or two old Peninsular veterans, it would be difficult to muster half-a-dozen of that famous association, which was once second only to Melton for the charms of society and the enjoyment of the chase. "All that's bright must fade": "the black eye will grow dim, the straight back will stoop, the full leg will fall, but the heart is always young"; and if there be an elixir vitæ to keep that organ ever fresh and healthy, it must surely be a career spent in a wholesome alternation of the duties of charity and good-will, with the simple pleasures of the country and the field. As Sir Charles Knightley rides out of his own gates at Fawsley, the peasant looks after him from his work, and smiles a blessing on his benefactor; the sturdy yeoman doffs his hat when he meets him in the lane, and is gratified at a passing word of kindness from the liberal landlord and judicious friend; whilst the gentry and aristocracy of the country are proud of their order, while they can number in its ranks such sterling men as the widely and deservedly-respected lord of Fawsley. Long may he continue in the position in which Providence has placed him, and which he so nobly fills; long may he be spared as a bright example to the country gentlemen of England—the kind master, the tender parent, the considerate landlord, the staunch friend, and the *perfect gentleman,* in the highest, the noblest, and the widest acceptation of the term.

THE GRASSES AT DIFFERENT STAGES OF THEIR GROWTH.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

That the grasses vary in their nutritious quality at different seasons is an old observation. This difference in the feeding qualities of grass could hardly have escaped the observation of the first keepers of live stock. The reasons assigned for this change have been rude, and of little practical value. The occupiers of the water meads of England's great southern chalk formation (to give an instance out of many) well know the value of the *first* spring crop of the irrigated grass for the food of their lambs and sheep; but they are also aware that the second crop of the season differs materially in its value. "It rots the sheep," they tell you. Then, again, the farmer remarks that the second or summer crop of grass is poorer in quality than the first or spring crop. It is not so fattening: when made into hay "it dries up too fast." Now, although some of the recent chemical examinations of grasses at different stages of their growth do not serve to explain all these practical observations, yet they still give us much useful information, and certainly serve to suggest more extended examinations; and they may lead to another important enquiry—the advantage of varying the top or other dressings applied to any given crop at different seasons.

It appeared as the general result of a careful examination of most of the ordinary meadow grasses, that those which come the earliest into flower contain the most water (*Jour. Roy. Ag. Soc.*, vol. xi., p. 533). This will be seen by the following table, which gives the mean amount per cent. of water and ash (*in the wet grass*) of groups of four specimens of various grasses flowering at the times assigned:—

	Water.	Ash.
Soft brome-grass, May 8	79.08	1.58
Sweet-scented vernal grass, May 25		
Annual meadow grass, May 28		
Meadow fox-tail grass, June 1		
Perennial rye grass, June 8	71.93	1.84
Annual rye grass, June 8		
Smooth-stalked meadow grass, June 11		
Cock's-foot grass, June 11		
Hard fescue grass, June 13	66.31	2.09
Rough-stalked meadow grass, June 18		
Crested dog's-tail grass, June 21		
Upright brome-grass, June 23		
Meadow soft grass, June 29	61.81	2.13
Downy oat grass, July 11		
Meadow barley, July 11		
Cat's-tail or Timothy grass, July 11		

Here it will be seen (remarks Professor Way) that, although the progression from very watery specimens in the month of May to much *drier* grasses in June and July is not altogether regular, yet it is well marked. Thus, whilst four specimens of grass collected between the first and last weeks of May afford on an average only 21 per cent. of *dry matter*, other four specimens collected during the two early weeks of July contain on an average 38 per cent. of dry matter, or nearly double. Practically, it is known to be the case that the early grasses, valuable as they are for spring food, do not afford the same weight of hay as those which come into flower at a more advanced period; so that in calling attention to this circumstance, we are merely enunciating in another form a well-known truth.

The grasses of irrigated lands seem to follow a similar rule. Specimens of grass from a water meadow yielded per cent.—

	Water.	Ash.
April 30	87.58	1.28
June 26	74.53	2.24

The nutritive properties of this grass, however (which was chiefly composed of the rough-stalked meadow grass, soft meadow grass, meadow barley, and perennial rye grass), being dried in a temperature of 212°, showed not only a much larger proportion of flesh and fat-producing principles to be present in the first crop, but (owing to the effects, we may, perhaps, conclude, of the irrigation waters) a much larger proportion of these principles than is to be found in *the same grass from unwatered soils.* The following was the result of Way's analyses (*ibid*, 180):—

	1st crop.	2d crop.
Albuminous or flesh-forming principles	25.91	10.92
Fatty matters	6·53	2.06
Heat-producing principles — starch, gum, sugar, &c.	32.05	43.90
Woody fibre	25.14	34.30
Mineral matters or ash	10.37	8.82

This grass was from a water-meadow at Stratton, near Cirencester: the soil is a rich loam with a gravelly subsoil, and the crops procured from it by the aid of water are very large. Two square yards of an average part of the field were staked out and mown on the 30th of April. The produce in the green state weighed 11¼lbs. On the 26th of June the second crop from the plot of two square ya was cut; it weighed 8¼lbs. The amount of the organic matters I have already given. The composition of the mineral portion or ash was as follows (*ibid*, vol. xi., 539):—

	1st crop, April 30.	2nd crop, June 26.
Silica	9.24	34.11
Phosphoric acid	9.31	5.56
Sulphuric acid	3.55	4.23
Carbonic acid	11.62	1.15
Lime	9.50	9.13
Magnesia	2.47	2.49
Per-oxide of iron	1.31	0.62
Potash	90.0	22.13
Soda	0.9	0.0
Chloride of Potassium	0.0	17.40
Common salt	2.91	3.14

The chief results noticeable here are—1, The larger proportion of silica present in the second crop, and the diminished amount of phosphoric acid and potash. This might lead us to examine the result of an application of either guano or superphosphate of lime, or a mixture of both, as a top-dressing for the second crop of grass. It is well known that in Peru the cultivators apply about one cwt. per acre of guano to their irrigated lands just before they let on the water; and in the case of the meads, which are irrigated with sewer water (when there is little or no difference in the bulk or feeding value of the three or four large crops produced), there is an abounding presence of both ammoniacal matters and of phosphate of lime.

There is no doubt but that the composition of even the organic portion of a plant is materially influenced by that of the manure with which it is dressed. Take, for instance, the amount of nitrogen present in the seeds of wheat. Now Hermstaedt found as the result of his experiments (*ibid*, vol. iv., 179), that the seeds grown *without manure* gave 9.2 per cent. of gluten (containing a large proportion of nitrogen).

Wheat grown with vegetable manure	9.6
„ „ „ cow dung	12.0
„ „ „ sheep dung	32.9
„ „ „ night soil	33.14

Neither are the alterations which take place in the composition of the plant during the growth of the crops of the farm confined to either the meadow grasses or the seed corn. The straw of the oat also appears, from the experiments of Mr. J. P. Norton, to undergo equally considerable variations in the proportion of the mineral substances which it contains. The oat he examined was of the potato variety, and the plants grown by Mr. J. Girdwood, of Carstophine, were, at the commencement of the experiment, from four to six inches in height (*Trans. High. Soc.*, 1845, p. 321). The following table gives the amount of water and of ash per cent. contained in the plants in each of the thirteen weeks, from June 4 to September, 3 employed in the investigation :—

Day when received.	The leaf. Water.	Ash.	The stalk. Water.	Ash.
June 4	80.51	2.16	87.04	1.36
„ 11	82.76	1.86	87.05	1.28
„ 18	82.02	1.63	87.13	1.28
„ 25	78.53	2.35	84.74	1.40
July 2	80.26	2.24	83.66	1.28
„ 9	76.97	2.81	82.05	1.40
„ 16	76.53	3.06	80.85	1.52
„ 23	77.61	3.85	79.60	1.63
„ 30	77.00	3.78	76.64	1.74
August 6	76.63	3.75	75.66	2.01
„ 13	74.06	6.14	69.80	2.00
„ 20	79.93	4.25	76.27	1.58
„ 27	70.68	6.49	71.56	2.19
Sept. 3	24.60	15.78	71.70	2.36

It next became of importance to ascertain the composition of the ashes of the oat plant at different stages of its growth. The following table contains the result of some of Mr. Norton's examinations. The ashes of the leaf of the unripe oat plant contained :—

	June 4.	June 18.	July 2.	July 16.
Potash & soda	24.60	26.21	18.78	18.35
Common salt	16.34	11.30	7.92	0.30
Lime	8.44	7.33	6.91	5.13
Magnesia	5.33	3.47	2.39	1.63
Oxide of iron	0.61	0.72	0.40	0.55
Sulphuric acid	11.74	10.59	9.50	13.05
Phosphoric acid	16.16	10 12	6.92	2.91
Silica	16.58	30.31	47.62	58.22

The ashes of the unripe stalk contained—

	June 4.	June 18.	July 2.	July 16.
Potash & soda	24.94	26.49	36.25	42.43
Common salt	32.66	24.94	11.62	4.46
Lime	2.40	3.74	2.64	4.12
Magnesia	0.88	2.20	1.17	1.47
Oxide of iron	0.39	0 40	0.88	0.62
Sulphuric acid	6.15	8.51	7.98	7.84
Phosphoric acid	16.15	12.55	2.21	6.31
Silica	16.29	20.41	36.64	34.85

It will be noted by the reader that during the growth of the plant the amount of potash and soda decreased in the *leaf*, but materially increased in the *stalk*. That the silica in both increased, but in much the largest proportion in the *leaf*, and that in both portions of the plant the common salt and the phosphoric acid very materially decreased during the six weeks the examinations continued.

We can hardly avoid the conclusion that these chemical examinations might not only be usefully extended, but that they lead to several other subjects for inquiry. It is evident that the requirements of the plants we have been examining vary in different stages of their growth, and that to a very material extent. It is probable, therefore, that certain fertilizers, which are hardly remunerative when applied in the ordinary way, might be rendered far more useful by improvements in the usual mode of employing them. We are all aware of the great difference which is produced by slight, and not always easily explained, variations of this kind, such as by sowing guano, gypsum, &c., in moist weather rather than in dry; or, to give another instance, the yet unexplained much greater good effect of applying a mixture of common salt and soot to certain crops, than by their separate application. We are, in fact, never likely to exhaust these kind of practical inquiries. Many generations of farmers and of learned professors will, probably, yet exist, who will together continue to explore Nature's fields, and to examine her manifold and, to us, mysterious movements; but there need be no apprehension of these useful researches being exhausted; as one difficulty is removed, one beautiful myth rendered intelligible, others will arise in rapid succession to excite our curiosity, and to reward the labours of the searcher after knowledge.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Monthly Council was held on Wednesday, the 4th of June. The following Members of Council and Governors of the Society were present: Lord Portman, President, in the chair; Lord Southampton, Sir Watkin Williams Wynn, Bart., M.P., Sir John V. B. Johnstone, Bart., M.P., Mr. Raymond Barker, Mr. Barthropp, Mr. Bramston, M.P., Mr. Bullock, Mr. Cavendish, Colonel Challoner, Mr. Druce, Mr. Gadesden, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Jonas, Mr. Kinder, Mr. Miles, M.P., Mr. Paine, Mr. Chandos Pole, Mr. Allen Ransome, Mr. Sillifant, Prof. Simonds, Mr. Simpson, Mr. Thompson, Prof. Way, Mr. Burch Western, Mr. Wilson, of Stowlangtoft, and Mr. Woodward.

Harry Stephen Thompson, Esq., of Kirby Hall, near York, was elected a Governor of the Society.

The following new members were elected:—

Allen, William, Stanbridge Hall, Rochford, Essex.
Alison, Alexander, Hainault Forest, Essex.
Baillie, Hamilton, Ash Hall, Cowbridge, Glamorganshire.
Beaumont, George jun., Bridgeford Hill, Nottingham.
Beever, Rev. William Holt, Cowbridge, Glamorganshire.
Blyth, James, 24, Hyde Park Gardens, London.
Chick, John, jun., Compton Vallence, Dorchester, Dorset.
Clarke, Frederick L'Estrange, Bwllwell, Milford Haven, Pembs.
Clowes, George, 57, Russell Square, London.
Clowes, William, Garretts, Banstead, Surrey.
Crane, James, jun., Tolpuddle, Dorchester, Dorset.
Cooke, Robert Carter, Livermore, Bury-St.-Edmunds.
Cooke, Grimwood, Horseheath Park Farm, Linton, Cambs.
Duckham, Thomas, Baysham Court, Ross, Herefordshire.
Elphinston, Alexander, Chewton Glen, Christchurch.
Emery, Robert Wortley, Ashby-de-la-Zouch, Leicestershire.
Fletcher, John Charles, Dale Park, Arundel, Sussex.
Garneys, Charles, Kenton, Debenham, Suffolk.
Gibson, Martin, Goosetree Farm, March, Cambridgeshire.
Glegg, Edward Holt, Backford Hall, Chester.
Glover, Robert, Wexford, Lichfield, Staffordshire.
Hall, Charles, Tolleshunt-Knights, Kelvedon, Essex.
Hambro, Charles, Milton Abbey, Blandford, Dorset.
Harding, John, Dursley, Gloucestershire.
Hawkins, Alexander, 111, London Road, Southwark.
Hewer, William, Sevenhampton, Highworth, Wilts.
Lewis, Edward, Pick Hill, Wrexham, Denbighshire.
Miller, George, Bishop's Stortford, Herts.
Nesham, David, Haughton-le-Skerne, Darlington, Durham.
Oldacres, Matthew, Clipston, Market Harbro', Leicestershire.
Robertson, General W. B., Chewton Glen, Christchurch, Hants.
Rust, George, Chatham Hall, Great Waltham, Essex.
Sibthorpe, Major, M.P., Canwick House, Lincoln.
Tabor, George, Rivenhall, Witham, Essex.
Walker, Thomas, Yanworth, Northleach, Gloucestershire.
Waller, Thomas, Sutton Hall, Woodbridge, Suffolk.
Webb, William Frederick, Sion Hill, Thirsk, Yorkshire.
Weiss, Foveaux, Chester-terrace, Regent's Park.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, laid before the Council the monthly report on the accounts of the Society, from which it appeared that the current cash balance in the hands of the bankers was £3,660.

Country Meeting of 1857.—Mr. Raymond Barker and Mr. Fisher Hobbs, as the Inspection of Sites' Committee for the district of the country meeting of next year, reported in detail to the Council the results of their personal visit to Bath, Dorchester, Salisbury, Taunton, and Winchester, and the respective accommodation offered by those localities for the holding of the Country Meeting of the Society.

Deputations were then received consisting of the following gentlemen, who favoured the Council with statements of their personal knowledge of the several localities proposed, and received the best acknowledgments of the Council for their attendance: namely, Marquis of Salisbury, Marquis of Bath, Marquis of Aylesbury, Earl of Shelburne, Lord Ernest Bruce, Bishop of Salisbury, Right Hon. Sidney Herbert, M.P.; Right Hon. Henry Labouchere, M.P.; Sir John William Ramsden, Bart.; Sir Frederick H. H. Bathurst, Bart.; the Mayors of Bath, Dorchester, Salisbury, and Winchester; the Bailiff of Taunton; Mr. Antrobus, M.P.; Mr. Beaden, Mr. W. J. Brown, General Buckley, M.P.; Mr. C. Bush, Mr. J. D. Bush, Mr. Chaplin, M.P.; Mr. Cotterell, Mr. Dowding, Mr. Estcourt, M.P.; Mr. Gale, Mr. E. W. Gillett, Mr. Hitchcock, Mr. G. W. Johnson, Mr. Knatchbull, M.P.; Mr. Stephen Mills, Mr. Thomas Pain, Mr. Edward Pope, Mr. G. J. Robertson, Captain Scobell, M.P.; Mr. Sheridan, M.P.; Mr. Sturt, M.P.; Mr. W. Thompson, Mr. Tite, M.P.; Mr. Turll, Colonel Rawdon Ward, Mr. Thomas Wegg, and Mr. Wyndham, M.P.

The Council decided that the Country Meeting of the Royal Agricultural Society of England for the year 1857 should be held at Salisbury, provided that the Andover and Salisbury and the Warminster and Salisbury Railways should be open for the conveyance of passengers, live-stock, and implements, by the 25th of

March, 1857; but that if such railways should not be open for such conveyance by that date, that the Country Meeting of 1857 should be held at Bath.

Prize Essays.—Mr. Thompson, Chairman of the Journal Committee, reported the following awards from the Judges of Essays:—

I. James Buckman, Professor of Geology in the Royal Agricultural College, Cirencester: the prize of Twenty Sovereigns, for the best Essay on the roots of the Wheat plant, describing their growth and development.
II. Robert Smith, of Emmet's Grange, South Molton, Devonshire: the prize of Twenty Sovereigns for the best account of the different modes of bringing moorland into cultivation.

Mr. Thompson then submitted to the Council, from the Journal Committee, the following schedule of the subjects and amounts of prizes for the essays to be sent in for competition to the Secretary by the 1st of March next; which the Council adopted:—

1. The results of microscopic observation applied to the vegetable physiology of agriculture, £50.
2. The best mode of levelling ridge and furrow pasture land after drainage, £20.
3. On the permanent amelioration of soils by admixture with others, £20.
4. Destruction of vermin infesting the homestead and stack-yard, £10.
5. On the comparative advantages of entering upon farms in spring and autumn; together with instructions to the young farmer on his entry at either season, £20.
6. On the results of drilling wheat or barley at different distances with the same quantities of seed; and also with varied quantities of seed per acre, £10.
7. Any other agricultural subject, £10.
8. On the comparative advantages of sowing beans in spring and autumn, £10.
9. On the early or late sowing of root crops, £10.

Agricultural Chemistry.—Mr. Wren Hoskyns, Chairman of the Chemical Committee, reported the following recommendations:—

1. The adoption of the new schedule of charges to be made by the consulting-chemist to members of the Society for analyses and professional opinions on different topics.
2. The reading of the consulting-chemist's annual report to the chemical committee, at the next weekly meeting of the Council.
3. The repetition, on the 18th of June, of Prof. Way's Lecture on the Composition of Drainage Waters (delivered in Whitsun-week, when many of the members were absent from town), with the addition of such matter as has been since derived from Prof. Way's further researches on that interesting and important inquiry.

These recommendations were adopted by the Council.

Veterinary Grant. — Mr. Raymond Barker, Chairman of the Veterinary Committee, laid before the Council the following recommendation, which, on the motion of Mr. Thompson, was unanimously adopted:—

> That the £200 per annum voted by the Society to the Veterinary College shall in future be appropriated as follows, viz., £100 per annum for the Lectures given in Hanover-square by the Professors of that institution; and £100 for the general objects contemplated by that grant; and that the £100 per annum for the Lectures be subject to the usual rules applying to papers intended for publication in the *Journal*.

Chelmsford Meeting.—Mr. Miles, M.P., reported the favourable progress of the arrangements for the Society's ensuing Country Meeting, to be held at Chelmsford in the middle of July next.

Implements at Work.—Colonel Challoner, Chairman of the Implement Committee, reported recommendations in reference to the implements to be shown in active operation at the Chelmsford Meeting. These recommendations were adopted.

Member of Council.—On the motion of Mr. Raymond Barker, seconded by Mr. Miles, M.P., the Earl of Powis was unanimously elected a member of the Council, in the place of Mr. Evelyn Denison, M.P., transferred to the class of Trustees.

Steward of Cattle. — On the motion of Mr. Fisher Hobbs, Mr. Jonas was unanimously appointed one of the Stewards of Cattle at the Country Meetings of the Society, in the place of Mr. Simpson, who retires this year by rotation.

Judges of Live Stock.—The Council appointed Judges for the several classes of Live Stock at the Chelmsford Meeting.

Disease among Cattle.—The Council were favoured by the Earl of Clarendon with the following communications from the Foreign Office:

"Foreign Office, May 31, 1856.

"Sir,—I am directed by the Earl of Clarendon to transmit to you, to be laid before the President and Council of the Royal Agricultural Society, the accompanying copy of a despatch from Colonel Hodges, Her Majesty's Consul-General at Hamburg, enclosing a copy of a despatch from the British Vice-Consul at Lubeck, reporting the sanitary regulations of that Government with respect to the pulmonary disease which has broken out among the cattle in Mecklenburg.—I am, Sir, your most obedient humble servant,

"James Hudson, Esq. "E. Hammond.

'Hamburg, May 24, 1856.

'My Lord,—I have the honour to transmit herewith to your Lordship a copy of a despatch received from Her Majesty's Vice-Consul at Lubeck of the 17th inst. The disease, which Mr. Blackwell alludes to, has been for some time prevalent in distant parts of the continent, and I have called upon him to procure more specific information as regards the subject, which when I receive I shall transmit to your Lordship. I have reason to believe that this disease has assumed a very formidable character in Mecklenburg, and that the losses are 90 per cent.'—I have, &c., 'G. L. Hodges.

'The Earl of Clarendon.'

'Lubeck, 17th May, 1856.

'Sir,—I have the honour to report that in consequence of a contagious pulmonary disease having broken out among the horned cattle of Mecklenburg, the same disease, I believe, which has caused such ravages among the cattle in Poland, the Lubeck Government have issued sanitary regulations to be adopted in case the disease should appear within the Lubeck territory, and have moreover enjoined, as a precautionary measure, that no horned cattle shall enter the Lubeck territory from the Duchies of Mecklenburg Schwerin and Mecklenburg Strelitz, except such as are certified by the proper authorities to be perfectly free from the disease.—I have, &c., (Signed) 'F. A. Blackwell.'

'Colonel Hodges, C.B.'"

The Council adjourned to their Weekly Meeting on Wednesday, the 11th of June.

A Special Council was held on Wednesday, the 11th of June: present, Lord Portman, President, in the chair; Lord Walsingham, Sir Stafford Henry Northcote, Bart., M.P., Mr. Raymond Barker, Mr. Hodgson Barrow, M.P., Mr. Bramston, M.P., Mr. Cavendish, Mr. Foley, M.P., Mr. Lawrence, Mr. Slaney, Prof. Way, and Mr. Wilson of Stowlangtoft.

Foreign Stock.—The period for receiving entries for foreign stock, to be shown at the Chelmsford Meeting, was further extended to the 28th June. The French Commissioner of Agriculture informed the Council of the intention of the Emperor of the French to pay all the expenses attending the transit of cattle to be exhibited at Chelmsford, and to send some of the finest specimens of improved short-woolled sheep from the Imperial bergeries.

Assizes.—The President informed the Council that the Lord Chief Baron of the Exchequer had kindly postponed the holding of the Assizes at Chelmsford, from the week of the Society's Show, for which they had been fixed, to a subsequent date. The thanks of the Council were ordered to the Lord Chief Baron for this mark of his kind consideration, and of his recognition of the national objects of the Society.

A Weekly Council was held on the same day: present, Lord Portman, President, in the chair; Lord Walsingham, Lord Lovaine, M.P., Sir Stafford Northcote, Bart., M.P., Mr. Raymond Barker, Mr. Hodgson Barrow, M.P., Mr. Bramston, M.P., Mr. Burness, Dr. Calvert, Mr. Cavendish. Mr. Foley, M.P., Mr. Ffytche, Rev. Philip Gordon, Mr. Lawrence, Mr. Majendie, Mr. Gurdon Rebow, Mr. Slaney, Dr. Timm, Professor Way, and Mr. Wilson.

Agricultural Chemistry.—The following Annual Report of Professor Way, Consulting Chemist of the Society, was read :—

In accordance with the usual custom, I beg to present to the Chemical Committee a report on the operations of the laboratory during the past year—that is to say, from the 1st of May, 1855, to the 31st of April, 1856. The number of analyses made in the laboratory during this period for members of the Society at reduced rates is 241. They are as follows :—

Soils	13
Marls and limestones	5
Superphosphate of lime	53
Guano	61
Animal charcoal, coprolite, and other phosphoric substances	23
Various other manures	53
Animal and vegetable products	8
Oil-cake	8
Waters	5
Miscellaneous	12
	241

This number is almost identical with that of last year, but inasmuch as my report in May, 1855, embraced only a period of 11 months, the number of analyses during the past year falls short to some extent of the previous year, although double what it was in 1854. It is probable that the changes in the list of charges, which will be proposed to the Council on the 4th of June, will, if adopted, cause a considerable increase in the number of those members who are in the habit of taking advantage of the laboratory. The great bulk of the analyses above mentioned are, as will be seen, those of guanos, superphosphate of lime, and other manures. I am gratified to be able to report, that although no doubt abundance of inferior manures are still to be met with, their general character is yearly improving, a result which may be ascribed to greater competition and better information on the part of the makers, but above all, perhaps, to the consciousness on the part of dealers that their manures will be in all probability subjected to the searching ordeal of chemical analysis. During the past year I have, at the request of the Council, made several examinations and reports, amongst which may be mentioned the various mineral and other substances collected in the Pacific, and forwarded from time to time by her Majesty's Government to the Society.

In the spring and summer of last year I delivered, as usual, three lectures on different subjects, one of which, "On the Atmosphere as a Source of Nitrogen to Plants," was subsequently published in the Journal of the Society.

Pursuant to a resolution of the Committee made in October last, I have since that time been engaged in an examination of the waters of land drainage, and have obtained results which I believe will prove very interesting to the agricultural public. The full details of this inquiry have been prepared for publication in the next number of the Society's Journal; but I may perhaps here mention, that in the course of the investigation it became necessary to institute a new method of determining small quantities of nitric acid, without which the examination of drainage water would have been comparatively valueless. No such method was in existence, although it had been long a desideratum, and the question had attracted the attention of chemists in all countries. After several months' labour I succeeded in devising a method by which extremely minute quantities of nitric acid could be estimated with great accuracy. It is true that very lately, and simultaneously indeed, the same thing has been accomplished in Paris by M. Ville; but this circumstance only proves how very much such a process was required. M. Ville's method is totally different from mine both in principle and practice.

I am engaged also, at the request of the Committee, in an investigation on the action of the atmosphere on soils; but although I have already obtained some interesting results, they are not sufficiently advanced for publication.

(Signed) J. Thomas Way.

15, Welbeck-street, May, 1856.

Members' Privileges of Chemical Analysis.—The Council, on the 4th of June, 1856, fixed the following rates of charge for analyses to be made by the consulting chemist for members of the Society, who, to avoid all unnecessary correspondence, are particularly requested, when applying to him, to mention the kind of analysis they require, and to quote its number in the subjoined schedule. The charge for analysis, together with the carriage of the specimens, must be paid to him by members at the time of their application.

		£	s.
No. 1.	An opinion of the genuineness of Peruvian guano	0	5
2.	An analysis of guano, showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts, and ammonia	0	10
3.	An estimate of the value (relatively to the average of samples in the market) of sulphate and muriate of ammonia, and of the nitrates of potash and soda	0	10
4.	An analysis of superphosphate of lime for soluble phosphates only	0	10
5.	An analysis of superphosphate of lime, showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime, and ammonia	1	0
6.	An analysis (sufficient for the determination of its agricultural value) of any ordinary artificial manure	1	0
7.	Limestone :—The proportion of lime, 7*s.* 6*d.*; the proportion of magnesia, 10*s.*; the proportion of lime and magnesia	0	15
8.	Limestones or marls, including carbonate, phosphate, and sulphate of lime, and magnesia with sand and clay	1	0
9.	Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	1	0
10.	Complete analysis of a soil..	3	0
11.	An analysis of oil-cake, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre; as well as of starch, gum, and sugar, in the aggregate	1	0
12.	Analysis of animal products, refuse substances used for manure, &c. .. .. from 10*s.* to	1	10
13.	Determination of the "hardness" of a sample of water before and after boiling	0	10
14.	Analysis of water of land drainage, and of water used for irrigation	2	0
15.	Determination of nitric acid in a sample of water	1	0

N.B. The above scale of charges is not applicable to analyses made for persons commercially engaged in the manufacture or sale of manures. The address of Professor Way, the Consulting Chemist of the Society, is 15, Welbeck-street, Cavendish-square, London, where all letters and parcels should be directed.

Communications were received from Mr. Parr on the utility that would arise from an extensive distribution of the schedule of Professor Way's chemical charges for analyses; from Mr. Fuller, M.P., on disease among his ewes in Sussex from inflammation of the udder; from Messrs. Prentice, of Stowmarket, details of their charges for Asphalte Flooring; from Mr. Thurlow on the pods of the "Locust-tree" as food for cattle; and from Mr. Salter, offering to communicate his views on the origin and cure of the Potato disease.

Lord Portman, Lord Walsingham, Lord Lovaine, M P., Mr. Lawrence, and Prof. Way, made interesting statements on Portland Cement and Asphalte Flooring, and on the character of the Locust-tree pods as food for live stock.

The Council adjourned to Wednesday, June 18, when Prof. Way would deliver a lecture on his additional researches on the Composition of the Waters of Land Drainage.

A Weekly Council was held on the 18th of June. Present: Colonel Challoner, Trustee, in the chair; Lord Berners; Lord Walsingham; Sir Arthur Hazlerigg, Bart.; Sir John V. B Johnstone, Bart., M.P; Sir Archibald Keppel Macdonald, Bart.; Mr. Raymond Barker; Mr. Hodgson Barrow, M.P.; Mr. Bramston, M.P.; Mr. Burness, Mr. Chadwick, Mr. Caird, Dr. Calvert, Mr. Cavendish, Mr. Evelyn Denison, M.P., Mr. Devas, Mr. Ffytche, Mr. Glegg, Mr. J. B. Glegg, Rev. L. Vernon Harcourt, Mr. Fisher Hobbs, Mr. Holland, M.P., Mr. Cuthbert Johnson, Mr. Munday, Mr. Orlebar, Mr. Paine, Mr. Thomas Scott, Professor Simonds, Dr. Timm, Mr. Tower, Mr. Wrightson, M.P., Mr. Wilson (of Stowlangtoft), Mr. Sutton Western, and Professor Way.

Drainage Waters.—Professor Way, the Consulting Chemist of the Society, gave a second Lecture on the subject of the chemical composition of Drainage Waters. This lecture is already in type, and will form a portion of the new number of the Society's *Journal*, expected to make its appearance in a few weeks. On the motion of Mr. Chadwick, seconded by Dr. Calvert, the best thanks of the meeting were voted to Professor Way for the valuable and interesting matter he had then brought before the members, and for the lucid manner in which he had explained the scientific details. Colonel Challoner, Mr. Evelyn Denison, M.P., Dr. Calvert, Mr. Chadwick, Lord Walsingham, and Mr. Paine called the attention of the meeting to particular points connected with the practical bearings of these researches, which enabled Professor Way, in reply, to render his statements more complete.

The Council adjourned to the 25th of June, when Professor Simonds would deliver his second Lecture on Parasites affecting Domesticated Animals.

ON THE GEOLOGICAL EVIDENCE OF THE DELUGE OF THE SCRIPTURE.

The geological evidence of the Deluge of the Scriptures is a subject which we waived, in our recent remarks on the paper by M. De la Trehonnais, in the *Journal d'Agriculture Pratique*, on the Keythorpe Drainage, in which he speculated on the origin of those furrows between the different members of the superficial deposits, of which that method of draining is said to take advantage. We observed, that he would find few geologists of the present day to agree with him in ascribing thereto the action of a great flood; adding, that the mode in which those furrows were formed was a question totally distinct from that of their practical application to the draining of land. In that point of view, their existence, depth, and direction, are the only inquiries of importance. The question, however, which we refused to entertain then, we are willing to discuss now as a separate inquiry.

In approaching this subject, the first point to be considered is the nature of that inundation as described in the book of Genesis. From that narrative it appears that it was transient, having occupied from its commencement to its close little more than a year; that the rise of the waters was gradual, and their subsidence likewise gradual; that vegetation was not wholly destroyed by it, for when the waters had abated, the dove returned with an olive-branch; and the rivers of Eden, before the Deluge, are spoken of as identical with those which existed after that event. Such is the Scripture narrative; and it must be carefully distinguished from particulars which have been engrafted upon it, and have passed current, till they have become mistaken by many for the narrative itself.

As proofs of the Deluge, two opposite classes of geological phenomena have at different times been appealed to: the fossils imbedded in the solid rocks; and the beds of loose sand, gravel, and clay irregularly distributed over their surface. The former opinion prevailed up to the close of the last century. While the sea-shells found high on mountain tops were referred to by divines as proofs of the Flood, it was forgotten that they were imbedded in the solid and hardest rocks; or, if that fact was admitted, various assumptions were made as to the nature of the Deluge, totally unconnected with the sacred narrative, and even opposed to it. The crust of the earth, for instance, was supposed to have been dissolved to a considerable depth, and softened to admit the reception of the shells; or the antediluvian lands were supposed to have become submerged beneath the sea, and the ancient sea-beds to have been then converted into dry land: the fact to which we have previously adverted respecting the olive-branch and the rivers of Eden being forgotten or kept out of view. The discoveries of William Smith, about the beginning of the present century, gave a death-blow to these views; and in conjunction with the proof they afforded that the earth is much older than the human race, contributed to excite great prejudice against the cultivators of geology, which has not wholly subsided in the present day, though it has of late considerably diminished. The researches of Smith, which extended over the whole of England, and embraced the whole stratific series, and the contemporaneous but independent investigation of Cuvier for a more limited district—the Paris basin, and for a small portion only of the strata, namely, the deposits above the chalk—while they overthrew the old diluvial hypothesis, gave rise to another. These investigations, simultaneously and independently pursued, established the fact that the stratified and fossiliferous rocks consist of numerous beds, laid one upon another, having a collective thickness of several miles; that there are groups of fossils confined to particular parts of the series, never occurring in it above or below certain strata; and that the fossils are thus separately arranged in the strata, with as much regularity and distinctness as in the drawers of a cabinet. The conclusion thus became inevitable, that a long lapse of time had been occupied in the deposit of these beds; that each bed had been in succession the uppermost, and represented a sea bottom, while the fossils which they contain are the remains of plants and animals which lived in the waters and on the land while the strata were forming. Other important conclusions arose out of these investigations. It became evident, as the fossils were investigated by competent naturalists, that through all the strata they were different from the remains of plants and animals now living, and that the deeper we descend in the series the greater the difference becomes. They belong, in fact, to successive creations; all formed on one plan, and indicating one mind, but exhibiting an almost endless variety of modifications. These modifications of plan were, moreover, gradually exhibited. Smith and Cuvier, who laid the groundwork of these astonishing discoveries, both recognised a distinction between the fossiliferous strata and certain beds of loose sand, clay, and gravel, spread irregularly over their surface; and Cuvier ascribed them to a great and transient irruption of the sea after the latest of the regular marine deposits which he had investigated had been deposited. Dr. Buckland gave to these irregular deposits the name of "diluvium." He referred to these superficial deposits, and the remains of land-animals which have been found in them, and in caverns, as the true evidence of the Noachian deluge. He showed that the bones in these caverns belonged to a different epoch from the shells imbedded in the strata; that the contents of the caverns attested the long existence of a terrestrial surface after the fossiliferous rocks had been converted into land, and that the remains of the land-animals found in these caverns had accumulated under a variety of circumstances. He showed that some of the caverns had been inhabited by hyænas, who dragged in the bones of other animals for food; that into others they had retired to die; that in other cases they had fallen into fissures communicating with the caverns, and had been washed onwards into the cavern itself. He showed also that the bones in the caverns are covered by a deposit of mud. This mud, he contended, was deposited from the waters of a violent inundation sweeping over the surface of the land, excavating valleys in the solid rocks—capable, by its violence, of transporting large fragments of them to great distances. While it acted thus violently on the surface of the earth, and became highly charged with mud, its effects within the caverns were merely to produce that tranquil deposit of mud and silt which generally covered the bones of the land-animals. The more limited generalisation of Dr. Buckland respecting the evidence of a long terrestrial surface afforded by the contents of the bone caverns remain unshaken, though the hypothesis which connected these phenomena with the deluge of the Scriptures has been abandoned as untenable. It was, however, very generally adopted by geologists, and for a time enjoyed considerable popularity, though there were some who objected to it even during the height of that popularity as inconsistent with some of the facts of the case, and equally inconsistent also with the narrative of that event to which Dr. Buckland referred them.

Up to this time, the tertiary strata which rest on the chalk in the London and Paris basins were supposed to be the most recent regular marine formations. As investigation proceeded, however, it became evident that, whereas the strata up to and including the chalk had been formed at the bottom of extensive oceans, those of the tertiary series had been deposited in more limited inland seas, like the Baltic and the Mediterranean, or of great bodies of fresh water, like the lakes of North America. Many of these deposits, it appeared, of gradual formation, had been confounded with the so-called diluvium. It was found, moreover, that the tertiary strata, more recent than those of the Paris basin, had been unknown to Cuvier, and represent a long epoch employed in their formation, and a gradual change in the conditions of organic life, after the old sea bottoms, up to and including the chalk, had been converted into dry land. It was found, moreover, that these more modern tertiary strata, of gradual formation, and containing distinct assemblages of fossils, had been confounded with the so-called diluvium, which was supposed to have been formed by a violent and transient inundation. As these facts became known, the diluvial hypothesis of Buckland was successively abandoned by those geologists who had been among its most strenuous supporters. Professor Sedgwick, among others, in an address which he delivered as president of the Geological Society, deemed it necessary publicly to renounce it, because, as he said, he was often quoted in support of opinions which he no longer entertained. It was finally abandoned by Dr. Buckland himself.

One of the objections raised against the diluvial hypothesis of Dr. Bucklandwas that, whereas it supposed the so-called diluvium to have been formed by a violent irruption of the sea—the object of which was the destruction of the human race—no human remains or works of art have been found in it; that the organic remains which it contains are not those of the sea, and belong to animals chiefly of extinct species. About the time, however, when most of the eminent geologists who had espoused the views of Dr. Buckland were abandoning them, shells of existing species began to be discovered in the so-called diluvium containing large blocks of far-transported rock. The blocks, by which these deposits are distinguished from others containing marine remains, caused the name of "northern drift" to be substituted for that of "diluvium," as merely expressing the fact that the erratic blocks found in it had been transported from the north. That general transport from the north has, however, been subject to many local modifications dependent on the general form of the surface. For it is evident that when it took place, the surface, with some exceptions, possessed nearly its present configuration. These blocks may, in many cases, be traced in gradually increasing numbers to their parent rocks, often distant hundreds of miles. The first shells found in this "northern drift" were discovered in a mountain in Wales, 1392, high and within a few feet of its summit. They were contained in a deep irregular bed of gravel and sand, containing fragments of rocks not belonging to the district, and which must have come from Scotland, Cumberland, the Isle of Man, and Ireland. These facts, which attracted much attention, were followed by the discovery of shells in this "northern drift" in so many places, in England, Ireland, and Scotland, as to render it surprising that they had never been found before. For a short time Dr. Buckland appealed to these discoveries in confirmation of his views; but he soon abandoned his own hypothesis in favour of another suggested by Agassis. That celebrated Swiss naturalist, having carefully studied the effects of the glaciers of the Alps, found so many peculiar facts common to them and the northern drift, that he ascribed the formation of that deposit to a vast cerecloth (as he expressed it) of ice, which he supposed to have overspread all the regions of the earth where the northern drift occurs, at a very recent geological epoch. Other observers had before him pointed out evidence in the Alpine valleys of these glaciers having had formerly a greater extent; but the views of Agassis required the Lake of Geneva to have been occupied by a glacier at least a thousand yards thick, to explain the position of blocks derived from the granitic regions of the Alps which are lodged in the flanks of the Jura. Glaciers, we need scarcely say, are collections of frozen snow, which are formed in the higher valleys of mountain-chains within the limits of perpetual snow, and which descend an inclined surface with a slow motion into the lower part of the valleys, till the warm temperature of those lower regions causes them to melt. They bear on their surface large blocks of stone and smaller fragments detached by the frost from the rocks. This detritus is scratched and polished, but not rounded like fragments which have been exposed to the action of the sea on the shore. Where the glaciers melt they leave large heaps of this rubbish, which are called "moraines," and in which it is mixed up with mud formed by the grinding of the glacier over the surface of the rocks in its slow descent. The rocks also beneath a glacier are polished by the friction of its slow descent; and this polished surface is traversed by finer scratches, formed by sharp fragments of stone set in the under edge of the ice. These appearances are all found in and under the deposits of the northern drift, and are peculiar to it, except in glacial regions. While, therefore, the extreme views of Agassis respecting a universal glacier found little favour among the majority of geologists, the opinion is now very generally adopted by them, that ice—partly terrestrial, but chiefly marine—contributed largely to the formation of the peculiar characters of the northern drift. We prefer the name of "erratic tertiaries." That name is perfectly independent of all theories respecting the mode in which these deposits were formed; it merely intimates that, being marine deposits which contain transported blocks of great size and distant origin, they are by this fact distinguished from the contemporaneous marine deposits beyond the southern limits of these transported blocks. These limits are about the 45th parallel of latitude in Europe, and a somewhat lower latitude in America. The evidence of a glacial climate during the formation of these erratic tertiaries is so curious, that we may be permitted to dwell a little on it.

The marine shells which have been found in these deposits belong, with the exception of about five per cent., to species which are known to be living; but these living species do not constitute the same group which now inhabits our seas. There are many northern, and even arctic, species mixed with them. Mr. Smith, of Jordan Hill, first drew attention to this fact respecting the shells found in these deposits in Scotland; Captain Bayfield and Sir Charles Lyell did the same respecting those of Canada; and they were extended to Ireland by Captain James, now at the head of the Ordnance Survey, and other observers. The investigations of that excellent naturalist, the late Edward Forbes, established the same conclusion respecting the shells found in these deposits wherever they occur.

The evidence, then, in favour of an arctic climate having extended much further south than at present, during the formation of the erratic tertiaries, is twofold: that derived from its peculiar physical characters—its far-transported blocks, its scratched detritus and the scratched and polished surface of the rocks beneath it—and those afforded by the arctic character of a large portion of its included marine shells. Their comparative scarcity in the erratic tertiaries over large areas may be mentioned as another fact, in which the deposits of the erratic tertiaries conform to the arctic type, as appears by incidental notices in the records of the polar voyages, having reference only to nautical observations, without any regard to geological inquiries.

The evidence afforded by the remains of land animals found in connection with the erratic tertiaries, appears at first sight to be somewhat opposed to that drawn from peculiarities in its composition, and from the arctic character of a large portion of its shells. We say the remains of land animals found *in connection* with these deposits, for they are only occasionally met with *in them;* but are either *under* them, as at Happisburgh, in Norfolk, or beneath another deposit (of which more hereafter), formed by some subsequent and hitherto unexplained action on the desiccated and denuded surface of the erratic tertiaries. The first announcement of these views will be found in a paper on the "Geology of Norfolk in relation to its Agriculture," in the "Journal of the Royal Agricultural Society"; and they have been extended to other localities, and described in the Quarterly Journal of the Geological Society. What, then, is the evidence as to climate, afforded by the remains of the land animals which inhabited England, and Europe in general, during and after the deposit of the erratic tertiaries? for there is evidence that the same land animals lived here before and after that event? They comprise animals which at first sight would appear to indicate anything but a cold climate. There is the elephant, rhinoceros, the hyæna, and the hippopotamus. These are animals belonging to genera which are not now inhabitants of Europe. The same species which are found in the superficial deposits of the erratic period are found also in the caverns which were inhabited by hyænas and other bone-gnawing animals who dragged them in for food. In other cases they had fallen through fissures, and into other caves they had retired to die So far, the evidence of the mammalian remains would appear to point to a warm climate in Europe during the formation of the erratic tertiaries; but these animals are associated with others which indicate a cold, and even an Arctic climate. There were bears in prodigious quantities. with the reindeer, the musk ox, and the marmot—all of an Arctic character; associated again with others, such as wolves and foxes, which abound in such regions, though they are not peculiar to them; and there were several species of the ox and deer kind which may have lived in any climate. But now comes another curious fact respecting climate, as indicated by the elephant and rhinoceros of that period. In the frozen mud on the coasts of Siberia the carcases of this extinct species of elephant and rhinoceros have been preserved, with the flesh and integuments entire. The flesh was in such a state of preservation, that on the carcases falling from the frozen cliffs, it was devoured by the bears and wolves. These ice-preserved carcases attest the fact that both elephant and rhinoceros were furnished with a coat of fur beneath the bristles which are the sole covering of the recent species. They were capable therefore of enduring a more northern climate. We have no evidence that the other extinct animals of this curious group—which are undistinguishable by their skeletons from living species—might not have possessed a difference of organization in the soft parts sufficient to constitute specific distinctions. Cuvier was of opinion that this might have been the case.

We have had two failures, then, in attempts to discover geological proofs of a universal deluge since man has been an inhabitant of the earth: first in the fossiliferous strata, and secondly in the superficial deposits once called diluvium. The northern drift is confined to certain latitudes, and it bears evidence to a gradual and long-continued submergence of large tracts of land beneath a glacial sea. The same species of animals, moreover, which inhabited Europe before that submergence, inhabited it (as we shall show hereafter) after the re-elevation of the submerged land, and afterwards disappeared—we know not how. Is there then no geological evidence, and have we reason to expect there would be any, of an event recorded in the Sacred Writings, and attested by the traditions of all nations?

We have traced the history of the superficial deposits to the submergence of a considerable portion of the northern and temperate regions of Europe beneath an icy sea. We have now to consider the indications which the study of the geology of the surface affords of subsequent events. We shall first find that the land was again re-elevated to about the same level. We say to about the same level; for it is a curious fact, that the fossiliferous deposits which underlie the boulder clay on the coast of Norfolk are so nearly on the same level with those which were formed on its denuded surface, that they are easily mistaken for one another. A careful examination, however, clears up this ambiguity, and renders it evident that the same species of land animals inhabited England both before and after the glacial submergence. There must have been therefore a connexion of England with the continent—some bridges by which these animals retreated during the period of submergence and returned during that of re-elevation. There is evidence also that both submergence and re-elevation commenced from the north; so that the southern parts of our island were dry land while the northern parts were submerged, and the southern parts under water while the northern parts had been re-elevated. The evidence as to a connexion subsisting at this period between England and France is furnished by the plants now inhabiting England as well as by its extinct animals. The English flora is divided into several provinces, all fragmentary portions of larger botanical provinces on the continent, and the plants which compose it must have migrated along different lines over continuous or closely adjoining land. The present flora of Britain, moreover, must have been introduced late in the tertiary period; for the leaves of plants so beautifully preserved in the pipe clays of Corfe Castle and Alum Bay, which belong to the eocene or oldest division of the tertiary deposits, show that the plants of that period were very different from the present British flora, and possessed the characters of that now indigenous to the Levant.

We divide the superficial deposits into four groups: the boulder clay or lower erratics, the sand and gravel of the upper erratics, the reconstructed erratics, and the warp-drift. The boulder clay was the deposit of an icy sea near the shore, and the gravel and sand of the upper erratics were the deposits of a more open sea. Under ordinary circumstances these latter are formed by the action of breakers on the shore; but it appears from incidental notices in the narratives of the Polar Expeditions that in Arctic seas these conditions are reversed. The presence of ice fixed to the land during the greater part of the year, and often for several years together, prevents the action of breakers. Mud is the usual deposit near the shore, and gravel and sand are found in the offing beyond the limits of the shore ice.

The boulder clay is found at higher levels in the interior than on the coast. This has arisen from the gradual advance of the shore line into the interior during the subsidence of the land. At still higher levels, which may be roughly estimated at about 1,000 feet, the boulder clay ceases; the gravel and sand of the upper erratics overlap it, and are in immediate contact with the rock.

The characters which distinguish the erratic tertiaries from all the other marine strata, are the scratches, grooves, and polishing on the surface of the rocks below them, and the scratching of the fragments included in them. There are also certain physical characters by which they are distinguished from one another. In the boulder clay all the fragments, large and small, are scratched; and they have not been rounded by being rolled. In the upper erratics the small fragments are in general rolled as in ordinary marine deposits; but there are certain large blocks among them, which have been derived from a distance, and they are scratched. These far-transported blocks have been borne on ice from distant shores just as icebergs are now floated from Baffin's Bay to the Azores, where they melt and drop the rocky fragments which they bear.

During the period of re-elevation, when the glacial sea bed was converted into dry land, the river channels were excavated in the erratic tertiaries, and their mixed materials were brought down to lower levels, forming beds of gravel more or less rolled along the lines of drainage, but at higher levels than those of the present streams.

These valley deposits we call reconstructed erratics. Detached portions of the original glacial sea bottoms are found near the heads of the valleys, and in other situations more free from this denuding action, as on the water-sheds between the lines of drainage. It is to this denuding action that the erratic tertiaries, which once formed a continuous deposit more extensive than any of the other tertiary strata, owe that fragmentary character which long caused them to be mistaken for the irregular deposit of some transient flood. The former connection of the detached masses becomes evident when they are laid down on a map, representing accurately the features of the country.

With respect to the general distribution of the erratic tertiaries, on the continent of Europe their southern boundary is an irregular line, ranging to about the 30th parallel of latitude; while in America they extend a few degrees more to the south. In England the boulder clay terminates abruptly on the northern skirts of the valley of the Thames. Some traces of that deposit have been found on the south-east coast, and more decided traces of the upper erratics are presented by the masses of flint gravel which have been thrown off from the chalk hills northwards across the valley of the Thames, and southwards to the coasts of Hants and Dorset. From these and other facts, into the details of which we cannot enter, it may be inferred that the fracture and denudation of the wealden area —the period of which has hitherto been a geological puzzle—took place towards the close of the glacial period. Until the distribution of these different portions of the superficial deposits shall be laid down on maps, with as much care and attention to detail and classification as has been bestowed on the solid rocks which form the substrata, we shall make little progress in the history of the superficial deposits, or in our knowledge of the distribution of soils. The first attempt of this kind was the mapping of the surface varieties of the greater part of Norfolk as the basis of the paper in the *Journal of the Royal Agricultural Society* before alluded to. The second was a small portion of Cardiganshire, mapped for the Government geological survey, much admired then and highly extolled, but for some unexplained reason never published, and which has somehow or other unaccountably disappeared.

Over the terrestrial surface, which existed for a long time after the desiccation of the bed of the glacial, was spread that deposit which we call the "warp drift"—a thin deposit, which in most cases constitutes the surface-soil, and masks or modifies the characters which it would derive from the subjacent rock. It is of very variable character, the variations depending on the form of surface and the nature of the rocks exposed. Its characters were first described in the paper before alluded to on the geology of Norfolk, and further observations extended to other parts of Great Britain and Ireland have confirmed those views. On level surfaces, above the reach of present alluvial action, it forms deep soils more productive than the alluvium itself. On level surfaces at a greater elevation it constitutes soils of less depth and of somewhat inferior fertility. On very steep acclivities it is frequently wanting, and there the rock beneath exercises its full influence on the soil. There are some remarkable facts connected with its distribution on the sides of valleys, which seem to connect it with the action of large bodies of water once flowing at higher levels than those valleys, rather than with long-continued atmospheric action. The depth of this deposit alternates for instance from side to side of the valleys—a thin, or no deposit on one side being opposed by a deep deposit on the other. Examples of this may be seen in the sections which accompany the paper on Norfolk before alluded to, and long-continued observation has confirmed and extended them. This deposit, like the upper and lower erratics, has its organic remains. They consist of the bones of the great mammalia animals now extinct, associated exclusively with land and fresh-water shells, which are found in hollows on the surface of older deposits beneath the deeper and most heterogeneous forms of this warp drift. There is the following distinction between the shells of the glacial or erratic tertiaries and the warp drift: whereas the former are marine, containing a large proportion which are of an arctic type, about five per cent. of them belonging to species not now known to be living; the shells connected with the warp drift, and associated with the last traces of the now extinct mammalia, are exclusively those of the land and fresh water. They are all of living species, in some instances distinguished by their greater size from the living examples of the same species.

It has been said that no men delight more in theory than practical men, and that they are rarely found to describe facts, except in the language of theory—some theory of their own, that is to say, founded too frequently on a very limited observation of facts. We must confess our experience to be in unison with this assertion. We have rarely conversed with a landowner or a farmer on the subject of the stratified rocks, their fossil contents, and their order of succession, or on the depth, composition, and distribution of the superficial deposits, but the first question asked is, How were they formed: was it at the Flood? For these reasons we have deemed it not out of place, in an agricultural journal, to devote a series of articles, of which this will be the last, to the consideration of the question, What are the geological evidences of the Deluge? We have shown that it is neither to be found in the fossiliferous strata nor in the northern drift, to both of which it has in succession been attributed. We have evidence that the most recent of the superficial deposits in Britain, which was subsequent to the northern drift, and which has only been brought under notice of late years, took place upon a terrestrial surface, from some hitherto unexplained aqueous action. We have pointed out that it contains, or rather covers the latest remains that are met with, of the great extinct elephantine and other large mammals, associated with land and fresh-water shells, all of living species.

It must be remembered that those species differ from the shells of the northern drift in not being of an Arctic character, but identical with those now inhabiting the neighbourhood. This warp-drift is of very limited thickness. It varies in depth with the form of the ground, and in composition with the composition of the neighbouring rocks. It exhibits alternation of deposit and a considerable amount of transporting force, though inferior to that shown by the deposits of the erratic tertiaries. It modifies considerably the character which the soil would derive exclusively from the rock immediately below. Such was the description given of it, ten years back, in the *Journal* of the Royal Agricultural Society, where the first mention of it occurs. The announcement was treated with derision; and warp-drift became the standing joke of the Geological Survey Office and the Geological Society. A party of geologists made an Easter excursion to Gaytonthorpe, in expectation of being able to invalidate the description of the fossiliferous deposits there; but they were unable to do so. The existence of warp-drift was denied because he who had pointed it out could not assign any cause now in operation which could have produced it. The name was objected to. He admitted it not to be a good one, and offered to change it when geologists, or the majority of them, should agree upon another. He reminded them that our best geological names are those which have no meaning as regards theory of formation, and requested them to look upon warp-drift in this light. Since then similar deposits have been described, under different names, by other geologists from so many other localities in England that they must be considered not as isolated cases, but as parts of some general phenomenon. Warp-drift is the "head" of Mr. Austen, on the south-western coast. It is part of the "angular flint-drift" of Sir R. Murchison, in Sussex. We say part of it, for we think he has not always drawn sufficient distinction between his angular flint-drift and certain other beds of gravel which in the district he described represent the upper erratic tertiaries. Warp-drift again is the "subcretaceous drift" of Mr. Martin, within the Wealden area. It is the "Sangatte drift" of Mr. Prestwich in France and the opposite English coast.

If the names by which these geologists describe warp-drift are various; no less various are the agencies by which they suppose it to have been formed. With some, it is the result of earthquake waves breaking over the land: with others, it was caused by a subsidence of the land beneath the sea, subsequent to the emergence of the erratic tertiaries; though why in that case the remains should be exclusively those of the land, has never been explained. By other geologists it is considered as an icy deposit. He who first brought it into notice confessed himself unable to assign any known cause now in operation for its production. He only offers negative opinions. It was neither formed by ordinary marine action, nor by glacial or glacio-marine action, nor by ordinary atmospheric action. He declares that he agrees with the observations of Mr. Prestwich respecting the Sangatte drift, as applied to the warp-drift in general, that the action which produced it was transient, violent, and suddenly arrested; to which he adds that it appears to have been intermittent. There is no deposit which, in its recent origin and its accumulation on a terrestrial surface, presents so many points of agreement with the Deluge of the Scriptures, affecting all the regions of the earth, those not then inhabited by man as well as those that were. At present, however, this deposit has only been observed in England, and the adjoining parts of France; and after the warning we have had in the failure of two diluvial theories, it would be the height of rashness to attempt to found another on the evidence which we at present possess, or are likely for a long time to possess, respecting this warp-drift. In Britain, it rests on the denuded surface of the erratic tertiaries; and where they are absent, on the surface of the older rocks. Are there any traces of a similar deposit in other regions? We have at present very imperfect evidence on this point; but what we have appears to point in the same direction. In various parts of the world very recent detrital deposits occur, associated with the extinct elephantine mammal, and in many cases with land and fresh-water shells of the species inhabiting the vicinity. For the formation of these deposits no satisfactory explanation has yet been offered, though many have been attempted. Among the regions where such deposits occur, beyond the limits of the northern drift, and which appear to be connected with the disappearance of the great mammals, we would mention the region of extinct volcanos, in Central France, and the gold regions of the Ural, California, and Australia. While, however, the disappearance of the great mammals is connected with this deposit, the less bulky animals, which by their skeletons are undistinguishable from living species, appear to have escaped. It is but right, too, to add that many geologists are of opinion—an opinion in which we do not coincide—that the elephantine and other extinct animals of that period were not destroyed by any catastrophe or series of catastrophes, but died out gradually. The question yet remains, Was the Deluge of the Scriptures universal, or only universal as regards the regions then inhabited by man? The present distribution of the animal kingdom is inexplicable on the supposition of a universal destruction of animal life at the epoch of the Deluge, unless we suppose a post-diluvial creation, which is more opposed to Scripture than the non-universality of the Deluge except as regards the regions inhabited by man. Such expressions as "the whole earth" and the "tops of the hills under the whole heaven," which appear the most strongly to indicate universality, may mean the whole earth then known to man, just as in the present day we speak of the eastern and western hemispheres as the Old and the New World. The language of Scripture may in this respect admit of such an interpretation; for in all cases where it speaks on subjects connected with natural phenomena, it uses language in consonance with popular notions and sensible appearances, language in conformity with ideas on those subjects which were prevalent at the time, and which prevail at all time among the uneducated mass of mankind. There are other parts of Scripture in which "the earth" is used for the Roman empire.

In the countries whose geology has yet been examined, it is difficult to find geological evidence of the existence of man upon the earth so long as we know he has inhabited it; while the geological history of the animal kingdom extends to an immeasurable distance into the depths of past time. The study of the superficial deposits is only partially pursued in England, and has only lately been systematically cultivated even there. On the Continent it is almost wholly neglected. Many, many years must elapse before we can have an accurate knowledge of those deposits in more distant regions; but when they shall have been carefully studied in those lands which were the earliest abodes of the human race, we have no doubt that as satisfactory evidence will be found of the truth of the Flood as the researches among the ruins of Nineveh have afforded of the truth of the Scriptures as regards the history of the Assyrian and Babylonian empires.

ON THE COMPOSITION OF RAIN AND DRAINAGE WATER.

Professor Way's second lecture before the Council of the Royal Agricultural Society, June 18, on this subject, does not contain much fresh matter, and therefore we shall reserve our remarks upon his "additional researches" until they appear in the columns of the forthcoming number of the Journal, the publicity of which is now close at hand. Meantime, we may notice what is wanting to give practically effective value to this interesting branch of science; for, as we stated on the 19th ult., the experimental investigation of the composition of rain and drainage water by the consulting chemist of the Society is merely the commencement of one branch of a great chemical undertaking, and therefore requiring the investigation of the other branches—such as the chemical analysis of soils, the composition and solubility of manures, the geology and mineralogy of soils, the mechanical construction and aëration of soils, and the drainage quality of soils—to make it complete.

The difference between the analysis of the water of the three farms, belonging to Messrs. Paine, Acland, and Hoskyns, clearly proves that there is a wide difference between the quality of the three soils through which the water percolated. What is this difference? Is it a chemical, geological, mineralogical, mechanical, manurial, or drainage-question? Mr. Way appeared to think that the extra quantity of nitric acid contained in Mr. Paine's drainage water over that of Mr. Acland was owing to the larger quantity of manure applied by the former; but this is not only a mere hypothesis, but one which, for aught he said to the contrary, may be at variance with fact, for the nitric acid of Mr. Acland's manure may be less soluble or better incorporated with the soil, or his soil may have a greater affinity for nitric acid, or a difference in the drainage quality of the soils may be the cause.

Again, the analysis of water which percolates through ploughed land to the open furrows on each farm are wanting, in order to show whether such contains more or less manurial element than that which percolated to the drains several feet below the surface. Mr. Way appeared afraid lest members should think his experiments militated against the first of all agricultural improvements (drainage), and one member did not hesitate to affirm that such was the case; but both appeared to overlook the fact that all lands are and must be drained whenever rain-water falls upon them in greater quantities than they can contain within their structure; so that the question is one between the water of open furrow drainage and the water of underground drainage, and this question neither attempted to solve.

Further; the analyses of soils when newly drained, especially those containing substances injurious to vegetation, are wanted in order to ascertain the amount of purification of such soils by washing; and also drained lands, before and after a shower, in order to ascertain the effect which uch has in removing deleterious stagnant air and its products, and admitting fresh air. We know from experience that stagnant water in undrained land is injurious to plants from poisonous substances it holds in solution; that all this water is not removed by percolation; that from some newly drained, mossy, and ferruginous soils the drainage water for some time is highly coloured, and that this ultimately ceases after the land has been drained for some time. We also know that during a long continuance of drought the animal, vegetable, and mineral substances of the soil under certain conditions become musty, the whole getting into an unhealthy state, and that a shower of rain sets the whole to rights, decomposition in a dry confined atmosphere being thus different from that with a sufficiency of moisture and pure air.

Now in all these cases it will readily be seen that the different branches of our subject ought to go on together; and that the members of the Society lose sight of their best interest if they do not keep Mr. Way's hands fully occupied; experimental science, or "practice with science," demanding an experimental answer in every case. Were landowners to organize themselves as a body, entering into arrangements for the investigation of their estates as we propose, how invaluable would be the series of tables annually furnished, and how important an impetus would it give to the progress of agricultural science!

CATTLE SHOWS IN SPAIN.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Knowing the interest taken by the readers of your valuable periodical in the progress made, either at home or abroad, in those branches to which it is specially devoted, I think they will be pleased to learn that Spain has now come into the field, and is turning her attention to the improvement of her breeds of cattle and horses, thus following the example of England and France; and considering the natural advantages of her climate and the richness of her pastures, there can be little doubt that by persevering in this course she will be eminently successful.

As a preliminary step, a society has been formed for holding triennial cattle shows; and in the first, which took place about a month since, eight beautiful horses of the celebrated Andalusian breed, owned by Mr. Geronimo Martinez Enrile, and of precisely the same age, colour (sorrel), and size, attracted universal admiration, and obtained one of the first prizes. England, however, came in as usual for her share of the honours, for another prize was conferred on a bull of the genuine Durham breed, belonging to the Messrs. De Martinez Enrile, and which was sent to them some three or four years back by their London connections, the Messrs. De Zulueta. This bull, since its arrival in Spain, has attained the great weight of upwards of 2,000 lbs. The object which the Messrs. De Enrile, who are the most extensive agriculturists in Andalusia, and owners of one of the most famous breeds of bulls in that country, have had in view, has been to cross the Andalusian cattle with those of Durham, with the expectation that the result will be the production of a very superior race, and taking into consideration the importance of success in this instance, it is to be hoped their desire will be accomplished; as also that England on her side will derive some benefit from the admixture.

Trusting that the above piece of intelligence will be gratifying to some amongst your numerous subscribers, I am, Sir,

Your most obedient servant,

A Traveller.

London, 26th June, 1856.

THE TYPE OF A HUNTER.—"Our own impression is, that to secure a good hunter, the size should be on the side of the dam, and the breeding on that of the sire. A large roomy mare should be put to a small, compact blood-horse. Sir Harry Goodricke, whose courtesy and discrimination of character, both in man and horse, has never been surpassed, was especially particular on this point, and would not buy a hunter whose sire was not thoroughbred. Still, ideas of hunters differ so widely, that we can only observe that one of the very worst faults they can acquire is not to care for falling, and fall back ourselves on the following masterly analysis, with which we are kindly favoured by one of the finest horsemen and judges of the day. 'Had I to choose a hunter,' he says, 'by seeing one point only, it should be his head; for I never knew one with a small, clean, intelligent face and prominent eyes to be bad. I like his neck also to be muscular, but not heavy; shoulders well back, with long arms; short from the knee to the fetlock; pasterns rather long, but not upright; his feet cannot well be described on paper, but they should be large and perfect, or all the rest is as 'leather and prunnella.' His back should not be too short, and he should have stout loins and wide hips, and good length from the latter to his hocks, which should be rather turned inwards. Added to this, he should be large round the girth, but whether in depth or width does not much signify; and the higher he is bred, the greater his intelligence, and the speedier his recovery from the effects of a hard day.'"—*From "The Post and the Paddock;" by The Druid.*

THE MARKET GARDENERS FOR LONDON.—The care and attention bestowed by the market-gardeners is incredible to those who have not witnessed it. Every inch of ground is taken advantage of—cultivation runs between the fruit trees; storming parties of cabbages and cauliflowers swarm up to the very trunks of apple-trees; raspberry-bushes are surrounded and cut off by young seedlings. If you see an acre of celery growing in ridges, be sure that, on a narrow inspection, you will find long files of young peas picking their way along the furrows. Everything flourishes here except weeds; and you may go over a 150-acre piece of ground, without discovering a single one. But the very high state of cultivation in the metropolitan market-gardens necessitates the employment of a large amount of labour; and it is supposed that no less than 35,000 persons are engaged in the service of filling the vegetable and dessert dishes of the metropolis. This estimate leaves out those in the provinces, and on the Continent, which would, we doubt not, nearly double the calculation, and show a troop of men and women as large as the allied army now acting in the East.—*Quarterly Review*

CLAY SOILS CONVERTED INTO LOAMS BY THE ACTION OF HOT LIME.

BY JOHN DONALDSON.

Clay was long considered to be the result of the decomposition of felspar and mica, which are the two principal ingredients in the constitution of the primitive rocks of granite and gneiss, and that the varieties and modifications have arisen from the different agencies to which the disintegrated matters have been exposed previous to the permanent locations. More recent discoveries have found it to be the earth of alum, which is a salt long known and extensively used in dyeing: it is a triple salt—the sulphate, or rather the supersulphate of alumina, ammonia, and potash. The analysis of Vanquelin showed the constitution as under:—

Sulphuric acid	30·52
Alumina	10·50
Potash	10·40
Water	48·58
	100·00

Alum is composed of alumina, potash, and sulphuric acid, and in its usual form containing a large quantity of water of crystallization. Its octohedral crystals consist of

Alumina	3	atoms	54, or	10·76
Potassa	1	,,	48, ,,	9·95
Sulphuric acid	4	,,	160, ,,	33·74
Water	24	,,	216, ,,	45·55
Crystallized alum	1		478	100·00

When heated in its water of crystallization, alum swells and enlarges much, and produces burnt alum, a light dry porous mass. Specific gravity 1·7.

Alumina, or the earth of alum, and the essential ingredient of clay, is a fine white bland powder, adhering strongly to the tongue, but excites neither taste nor smell. It is insoluble in water and alcohol, but has considerable affinity for water, increasing in weight about 15 per cent. by absorbing moisture, and retains it with great obstinacy; cold contracts it, and squeezes out much water, and it loses weight by the heat evaporating—has a strong affinity for lime, but does not combine with oxygen: with silica and lime it forms the basis of all pottery and porcelain, from the coarsest brick to the finest china. When it contains the oxide of iron, it emits the well-known earthy smell of clays. Alumina forms a paste with water, and hardens by the action of fire, and loses the first property by acquiring the second: to regain it, the hardened substance must be dissolved in an acid, and precipitated.

It was early discovered that alum was composed of sulphuric acid with an earth; but the nature of this earth was long unknown. Stahl and Newman supposed it to be lime; but in 1728, Geoffrey, jun., proved this to be a mistake, and demonstrated that the earth of alum constitutes a part of clay. In 1754, Margraaf showed that the basis of alum is an earth of a very peculiar nature, different from every other—an earth which is an essential ingredient in clays, and gives to them their peculiar properties of smell and ductility. The earth has been called "argil," from being a white powder; but Morveau afterwards gave it the name of "alumina," because it is obtained in the state of greatest purity from alum. It is got from this substance by dissolving alum in water, and pouring ammonia into the solution, when a precipitate appears; this precipitate is separated and washed, then boiled in liquid potash till the whole is dissolved; a solution of sal-ammoniac being poured into this liquid, a white flocculent matter precipitates, which when washed and dried is pure alumina. It has no taste; and when pure no smell. The specific gravity is 2,000.

Previous discoveries led Sir Humphrey Davy to consider alumina as a metallic oxide. His experiments leave little doubt on the subject, though he did not succeed in obtaining the metal in a separate state. When potassium is passed through alumina heated to whiteness, a considerable proportion of it is converted into potash, and gray metallic particles are perceived in the mass, which effervesce in water, and are converted into alumina. When a globule of iron is fused by galvanism, in contact with moist alumina, it forms an alloy with aluminum. It effervesces slowly in water, being covered with a white powder. To this metallic basis Davy gave the name of aluminum.

But it is to Wohler that we are indebted for a method of obtaining aluminum in a state of purity, and for determining its properties. Professor Œrsted formed an anhydrous chloride of aluminum by mixing dry alumina with charcoal powder, and passing a current of dry chlorine gas through the mixture while heated to redness in a porcelain tube. By decomposing this chloride, Wohler obtained pure aluminum, which in this state has great resemblance to platinum. When burnished it assumes the metallic lustre and the splendour of tin. When rubbed in a mortar, the scales admit of compression, and then constitute larger scales, so that in all probability it is a malleable metal. It is not fusible at the temperature at which iron melts. A strong heat does not alter it; and in powder it is a non-conductor of electricity, as is the case with iron. A red heat changes it into alumina—and if the heat be very violent the fusion is hard enough to cut glass, and almost as hard as sapphire.

So far as is known at present, aluminum unites with only one proportion of oxygen, and forms the base usually distinguished by the name of alumina, which is a compound of

1 atom alumina	1·25
1 atom oxygen	1·00
	2·25

Berzelius considers alumina to be composed of

Aluminum	53·3
Oxygen	46·7
	100·0

Hydrogen being reckoned unity, he regarded its constitution to be two atoms of aluminum,

$$13·716 \times 2 = 27·432,$$

with three atoms of oxygen,

$$8·013 \times 3 = 24·039.$$

its atomic weight is consequently 51·471.

Dr. Thomson states its constitution to be one atom of aluminum = 10, with one atom of oxygen, = 8, giving 18 as its atomic weight.

Brande gives the constitution of alumina as under:—

Alumina	52·94
Oxygen	47·06
	100·00

It appears probable from the experiments of Sir H. Davy, that alumina is a metallic oxide; but he was not able to extract the metallic basis by means of electro-galvanism so clearly as in the cases of lime and potass; and consequently alumina must remain to be considered as an analogical peroxide, of which the base is a terrigenous metal, that yet wants the due confirmation. The above illustrious chemist threw out the idea that all the metals have one common origin, and the different kinds that are found are modifications of the primary formation; and that the earths are derived from the metals by oxidation, and are metallic oxides. A theory may be propounded that all the earths have one common origin, and that the kinds and varieties that occur on the face of the globe are modifications of the parent substance, and have proceeded from accidents and occasional circumstances of operation. This latter idea may be as reasonable as the production of soils by oxidation, and more especially when the original metals are not to be seen in existence, but are found by nice artificial processes.

Clays that are cultivated as lands, are of two kinds—marine deposits, and fresh-water formations, which in both kinds possess the baffling quality of a large reception and obstinate retention of water, and a very anomalous natural quality of contracting by heat, and conducting caloric in a degree that is almost the lowest of the graduated scale of metals and earthy bodies—gold being at the top of the list in 1,000, clay is at the bottom in 11·4. The earth imbibes fifteen times its own weight of water without dropping, and retains it with great obstinacy, and this condition forms an almost insuperable barrier to the working of the land in cultivation.

The quality of contracting by heat is still more baffling to the cultivator of the soil; for the lumps of earth become hardened and glistened, and resist every mode of reduction. Expansion is so general an effect of heat that there are only two known exceptions, viz., in clay and in water to a certain limited range of temperature. Baked clay is much contracted, and remains in its lessened dimensions. The expansion of bodies proves the mutual repulsion of their particles; but this limits the repulsive energy of heat to insensible distances. Cohesion is the force that is opposed to expansion, which is least in solids, where the cohesion is strongest—it is more considerable in liquids, where the cohesion is greatly weakened; and it is greatest in gases, in which cohesion is wholly overcome.

The specific caloric, or latent heat of clay, is very small, and water being 1, it may be placed at 0·12, and ranks among the oxides. The cohesion of the particles is much too powerful for the repulsive energy of the specific caloric, and the small quantity of the latter constitutes a weak affinity or property for combining with an indefinite application of the peculiar element. Water contracts to the downward temperature of 42°; but whilst passing from that point down to freezing point, it continues to expand gradually, until converted into ice. When a body changes its form of existence its capacity for heat is also changed; when a solid is melted, its capacity is increased, and the specific heat of the same substance is still farther increased when it is converted into vapour.

Heat is a peculiar substance that causes sensation, and caloric is the cause of it. The necessity of heat to the promotion of vegetable growth is too well known to need any arguments or demonstration to establish the truth; the want of it causes sterility, and too much induces first a flaccidity in the growth, and at last a scorched barrenness. A medium temperature is the condition that is suitable to all beneficial growths. For this purpose it is necessary that heat be not only communicated, but that it be retained by bodies that are capable of administering it in the proper channels of distribution for vegetable use. The diffusion of heat is equally necessary with the presence of it, and the permanent residence of it, or what is called the specific caloric of bodies, constitutes a property of the very first importance in the agricultural consideration. Some bodies conduct caloric much too freely, and are over-heated; but the property is soon expelled and gives place to an opposite extremity of affection. Others deny a passage, and consequently remain in a condition that is very unfavourable to vegetable life. These variations are deserving the most minute and serious entertainments.

Heat is to be regarded as a material agent of a peculiar nature, highly attenuated, and, from its affinity or attraction for all other matters, universally distributed amongst the particles of bodies, in quantities proportional to their mutual attractions, or as it has been termed, " the capacities" of different substances for heat; whilst its tendency to diffuse itself amongst contiguous bodies has been explained on the supposition of its own particles being repellent to each other. Another opinion considers heat as a mere quality of matter, and ascribes it to a vibratory movement among the intimate particles of bodies; but the idea seems vague and unsatisfactory. There is no explanation of the manner in which this motion is produced, and no movement can be conceived without an impulse, nor an impulse without a material agent. Heat pervades all sorts of matter; it remains in some circumstances dormant, or what is termed "latent," and may be again elicited from bodies by various means. The heat may be supposed to be produced not merely by the motions of the particles of the heated substances, but by the vibrations or undulations of a very subtile matter existing in all bodies. This will approximate the vibratory to the last mentioned opinion, and also to the undulations that are explanatory of the phenomena of light, to which heat has so intimate a relation. The nicest balance fails to ascertain the accumulation of heat in any body, owing to the very extreme subtilty of its form: the fluidity is proved by the ease with which it insinuates itself amongst the particles of matter: its affinity for other matter is shown by its being universally contained in all bodies, in proportions differing in each kind of substance: its repulsion amongst its own particles is proved by its tendency to exist in a state of equilibrium in contiguous bodies.

The effects of heat are four in number:—I., Temperature, or the production of the sensation of heat; II., Expansion, or the simple augmentation of the bulk of a body without altering its condition; III., A change in the physical state of a body, by which a solid is converted into a fluid, and a fluid into a gas; IV., Ignition, or the operation of heat by which a body is rendered luminous. Temperature is the effect produced by heat on the animal body, which will vary according to the quantity of heat which it contains, and may be said to be in the direct ratio of this quantity; although the indication of temperature, which is derived from the sensations, is much too vague to enable the laying down of an exact scale of admeasurement. The proportion of effect only applies to the same body, or to those of a similar kind; for it has been found that the same quantity of heat affects the temperature of different bodies in very different degrees. These different effects depend partly upon the capacity of bodies for heat, and partly upon their conducting power, which points have been already discussed. Expansion arises from the distribution of heat among the particles of bodies, and remains so long as a high temperature is maintained: but when the heat is withdrawn the body begins to contract, and by degrees it acquires its former bulk. This expansion occurs, with very few exceptions, in all bodies; but it differs extremely in degree, and is much greatest in aëriform fluids of all kinds. It is less in quantity, though still considerable, in liquids; while in solids it is so small as not to be perceived, except by the intervention of an apparatus expressly contrived to render it visible. Not only general classes of bodies, but individual substances comprised in the classes, have very different degrees of expansive power, which has been frequently made the subject of experiment. Ignition, or incandescence, is the property which bodies possess of becoming luminous, after being exposed to a high temperature, without any chemical change in the composition. Combustion is an extension of ignition, by which the body extricates light, is consumed, and a complete change is effected in its chemical nature.

The third effect of heat is the most important and appertains precisely to the present purpose. The effect of caloric consists in introducing a portion of heat between the particles of bodies, by which they are to a certain extent separated from each other, so as to experience an increase of bulk, without having their cohesion materially impaired. If however, the addition of heat be continued beyond a certain limit, the particles are removed still farther from each other, until at length they are so far separated as to lose their cohesive power, and to become easily moveable among themselves in all directions. By this change of form, the substance in question undergoes a complete alteration in its physical properties, and not unfrequently in its chemical action on other bodies. The effect is produced by destroying the balance between the expansive power of heat and the force of attraction, the former tending to remove the particles of bodies to a distance from each other; the latter to retain them in close contact. But though the attractive power is conceived to be very much weakened in bodies that are so much separated in the particles, it is not entirely destroyed, but it is still exerted with considerable energy.

The facility with which bodies conduct heat is not exactly in proportion to any of their sensible qualities, but is more nearly in the direct ratio of their density than any other quality. This may be ascribed to the greater intensity of the repulsive energy of the caloric that surrounds each particle of dense bodies, by reason of their greater proximity, conveying each fresh addition of temperature with greater celerity through such substances. But if heat be reckoned a material agent, this quickness of conducting power may also be modified by the different degrees of affinity between caloric and each kind of matter. Heat passes less readily through solids when they are of a spongy or porous texture, than through those that are more dense and compact: the portions of air become entangled in the pores, which seem to prevent the communication of heat. A repulsive power is an inherent quality of heat, and is the cause of its diffusion among bodies; but the manner in which it is distributed, and the particular law which it follows in passing from and entering into bodies, seem to depend upon a different principle, or at least to be modified in a way that cannot be referred to repulsion. A double operation may be supposed, that heat escapes from one body, in consequence of the repulsive power that exists between its particles, while at the same time it is attracted by the particles of the body which it enters. As a general principle it may be stated that the densest bodies are the best conductors; but to this rule there are many exceptions. But so many instances confirm the rule, that when the ratio seems not to be strictly maintained between the density and conducting power of bodies, the interference of some other principle must be attributed. A difference in the state of aggregation increases or diminishes the conducting power of a body in proportion to its density, or to the contiguity of its particles, without having experienced any chemical or any other physical change. Solid iron or wood are better conductors than filings of the metal, or saw-pit dust. Clay being the oxide of a metal, is a worse conductor than solid bodies, besides its spongy porousness being adverse, as above noticed.

The conducting power of bodies depends principally upon three circumstances:—it is affected partly by the mechanical relation of their particles to each other, partly by an attraction between the heat and the particles of which the body is composed, and partly by the radiating power of the heat. A greater or less density, or an aggregation of the parts of bodies producing a considerable effect upon the conducting powers, would induce the supposition that the worst conductors should be regarded as merely the most effectual retarders of heat, and the best conductors as simply those that have the least power in retaining the heat that has been imparted to them. This view supposes the conducting of heat by bodies to be the radiation of it from particle to particle, operating at very small distances. Hence, solids are better conductors than loose bodies, as the particles are more contiguous, and admit a more rapid communication of the subtile element. Those bodies that radiate best imbibe it best, and those which radiate worst imbibe worst.

The specific caloric in bodies submits the relative quantity in heat, or the quantities that are necessary to produce a given change of temperature; the absolute quantity states the amount of temperature which the body possesses without any addition or subtraction. The specific heat has been supposed to be proportional to the absolute heat of bodies, and that the heat emitted or absorbed by a body when it changes its state is merely the consequence of the change which has taken place in its specific heat. Unfortunately the truth of the two suppositions upon which this ingenious reasoning is founded cannot be admitted. There is no proof that the specific heat of bodies is proportional to their absolute heat. The second supposition is at variance with the mechanical phenomena which present themselves when substances change their state, and would leave that change itself unaccounted for. It cannot, therefore, be admitted, and the various methods must be rejected that have been proposed for the solution of this most important problem.

Caloric not only increases the bulk of bodies and changes their state, but its action decomposes many compounds altogether, either into their elements, or it causes these elements to combine in a different manner. Combustion is an extension of the action of heat, and it banishes the properties of bodies that undergo the process, and confers others which they did not before possess. When a body changes its form of existence, its capacity for heat is also changed. Liquefied solids and vapourized liquids have their capacities for heat increased, from being transformed into these conditions from their original existence. This change is effected by combining with caloric, or by separating from it, according to the absolute condition which the bodies enjoy.

These considerations allude to the fusion of solid bodies by an intensity of caloric, by which they become fluid, and to a further expansion by which the liquidity is evaporated into aëriform matters, and is transformed into gases from being volatilized by a larger introduction and use of heat. Every kind of matter has been with a reasonable propriety supposed to possess the three forms of solid, liquid, and aëriform, and the different conditions of formation only infer a varied temperature under which they exist. The earths are not fusible by the known powers of agency, though the discovery may not be distant as in some other similar cases. Limestone resists the utmost power of the furnace, which arises from the escape of the gas with which the homogeneous body is combined; but when it is confined by a severe compression, the fusion becomes quite easy. The earths may be infusible from a similar reason, or by the escape of the gaseous products that arise from the contact of the earthy body with the subtile element. But though this part of the application is not attained, the sunderment of the mass is thoroughly effected, attended with a destruction of the power of cohesion, and the particles are disjoined, and never again adhere in an agglutinated form. This condition falls short of the state of fluidity, which exhibits the most complete change that nature admits; while the altered state of the earthy condition exhibits the particles in a different position, but still retaining the primitive nature divested of its peculiar properties, and endowed with new qualities which did not before enter into its composition. On this effect of heat, the following proposed alteration is sought to be established.

Clay being composed of a viscous clammy earth, with sulphuric acid and water, presents an obstinate resistance to an action of any kind, whether it be exerted for the external purpose of reducing the indurated texture, or in the mixture of earthy materials, or fertilizing substances, with the view of stimulating the efforts or improving the nature of the land. The acid is one of the oldest in the use of chemistry, and bore the names of "oil of vitriol," and "vitriolic acid," as it was obtained by distilling the salt called green vitriol, or the sulphate of iron. It is an acid product from the base of sulphur, having 150 proportions of oxygen combined with 100 of the base, being the largest quantity of oxygen in any acid except the boracic. The acid is liquid, somewhat of an oily consistence, transparent and colourless as water, without any smell, and of a very strong acid taste. It destroys the texture of animal and vegetable substances. The specific gravity, when as strong as possible, is about 1·85, and the specific caloric 0·35. It changes all vegetable blues to red, except indigo. It boils at 546°, and when exposed to cold it crystallizes or congeals. It freezes at 45°, and the temperature necessarily depends upon the strength. When stronger or weaker, it requires a much less or greater degree of cold.

It has a strong attraction for water, and when exposed to the atmosphere imbibes nearly seven times its weight of that fluid. When the two liquids are mixed together, a considerable heat is evolved. The strongest sulphuric acid of commerce contains about one-fifth of water, and the remaining four-fifths are pure acid. It is a compound of one atom of sulphur, and three atoms of oxygen; and contains

Oxygen	60
Sulphur	40
	100

Oxygen does not act upon it, nor combine with it, and the acid is not altered by exposure to light or heat. Azote has no action on it, and when concentrated it has little action on the metals; on gold and platinum it has no effect whatever. It unites readily with the alkalies, earths, and metallic oxides, and forms with them a class of bodies called sulphates.

Sulphuric acid is a most noxious ingredient in every case of contact with animal and vegetable life, and consequently must be expelled in order to render the earth of clay a useful body for the purposes of vegetation. To drive off an acid from the salifiable base with which it is combined, the case of lime shows that a violent and continued heat is required, which, being strong and powerful, expels the acid in the form of a gas, and is much facilitated by the presence of vapour. The loose combination of the gas with the earthy base may allow this effect with a comparative facility; for in the case of gypsum, or the sulphate of lime, the most violent heat is unable to expel the acid, and the earth remains unchanged. It is not known in what quantity, or in what ratio of combination the acid is associated with the earthy base of clay; but it may be inferred from the case of lime and gypsum, that a powerful violence will be required for the purpose of expelling the noxious ingredient. Quicklime has been long known and used as a caustic solvent of much power, and producing very beneficial effects in the ultimate results.

Lime is an alkaline earth in combination with carbonic acid gas, in about

Base	56
Acid	44
	100

The other ingredients are very few and minute. A very violent and continued heat expels the acid in the form of a gas, and the stones in lumps are seen as cinders, that are much reduced in weight, but no way diminished in the size. When this condition of the rock or stone is supplied with moisture and the contact of air, a hissing noise takes place, a vapour arises, much heat is evolved, and the cinder falls down into a powder of very minute globular masses, and exceeding the original bulk in the ratio of 2 or 3 to 1. This heat assumes the shape of damp exhalations rather than a fiery ignition; but light attends the evolvement in a dark place, and the confinement of it produces combustion. After lying a determinate time, the powdered earth imbibes a portion of carbonic acid gas from the air of which it is a component part, and assumes the mild nature which it enjoyed before the banishment of the gas conferred upon it the caustic quality. But it does not again adhere or become solid, and remains in the condition of a mild earthy ingredient. Having undergone the action of fire, it has lost the former condition, and has acquired new qualities which it did not formerly possess. In the caustic condition of hot cinders, it has been much used as a solvent in reducing the texture of fibrous bodies, and in changing the nature of harsh and repulsive materials. The compost manures got from lime and earths show the power of hot unpowdered lime in dissolving the texture and altering the nature of the most obdurate earthy materials; the earthy mass and the cinders of lime are mixed in an intimate contact—the contact of air through the cavities of the heap, and the moisture in the earths, dissolve the lime, when an enlargement of bulk takes place, much heat is evolved, which thoroughly penetrates the mass, unbinds the texture, sunders the particles, and destroys or banishes every liquid adherence. Turnings or movements of the mixed heaps provoke fresh motions of the elastic matters, till no more heat is evolved, or enlargement happens, when every action ceases, and the quiet materials subside into a soft mucilaginous mass that has proceeded from the earthy bases of the opposite matters, which have been acted upon by contrary qualities and reciprocal affinities. This mass of mixed ingredients has been found to be a very rich application, and never fails in yielding the anticipated effects. Caloric is one chief spring of chemical affinity—it dilates bodies, separates the particles, diminishes the attraction for each other, and proportionally augments the attraction of the particles of adjacent bodies, and consequently produces combinations and facilitates reciprocal unions.

The conversion of clay and of clayey substances into a very valuable manure, by being mixed with and operated upon by the caustic action of quicklime that is seeking to regain some part, if not the whole, of its primitive existence, leads to an extension of the practice in the application of lime to the clay lands of the fields, and to convert the wet and clammy constitution into dry and productive loamy grounds. This operation will be best performed by the lime cinders being dug into the land by the spade, after a complete summer fallowing and a thorough draining, which is imperatively required, by reason of the very extreme solubility of lime in water, and its consequent inutility and total loss for any useful purpose. The depth of the digging may be one spit of the spade, or 9 inches; and a good spadesman is allowed to dig an acre of ground in two weeks, or twelve working days. But as all clay soils are stiff and heavy to work, and some of the lands being most exceedingly viscous and obdurate, the placing of the lime shells in the trenches in the requisite quantity and position will occupy more time than if the land was only moved and carelessly thrown aside. The time of eighteen days of a man, at 2s. per day, is £1 16s. for digging the ground, and of placing the lime cinders in the quantity of mixture.

Judging from the mixing of clay and lime in the compost heaps, it is assumed that one bushel of quicklime will be sufficient for a cubic yard of ground, and the depth of nine inches will require 360 square feet, or 4 square yards, to constitute a cubic yard, and forming 1210 cubic yards, or as many surface plots of ground as determined by the quantity of 4840 square yards in an acre. This calculation will require 1210 bushels of lime, which at the average price of 6d. per bushel, will make the cost of lime to be £30 5s. per acre; and added to the cost of digging in £1 16s., will form a total of £32 1s. A general average may be written at £30 to comprehend varied cases and modifications.

A timid and short-sighted inspection will, without reflection, condemn the above plan in the cost being fully equal to the purchase of the land, and on that account is wholly inadmissible into the list of any reasonable performances by the cultivators of the soil. It is at once admitted that such entertainments are wholly removed beyond the sphere of the farmer—distant prospects are not in his calculations nor suited to his means—and the permanent possession must be saddled with the performances that are intended to yield a benefit in a future regularity. And further, very extensive and lasting objects of attention, such as the change of clay into loams, must become a national concern, and be done by the general cost of the people. The loans of money that are now granted by Government for draining wet lands must be extended in the purpose, and comprehend all objects of cultivable utility as are now detailed—the amount granted should be quintupled, the time of repayment doubled, and the charge of per-centage cut in the one-half. General utility always requires a varied comprehension for the development of the intention that is entertained.

But in all intended operations of any kind, degree or extent, not the ways, means, or methods, form the primary consideration, but the object that will be attained—not the present loss that will be sustained, but the ultimate results that will crown the efforts of the enterprize, and the fruition that will be obtained in a never-failing continuance. "Let us only find a thing," said D'Alembert, the celebrated French mathematician, "and there will be found plenty of persons to put it into shape." In like manner, let the ultimate result be shown of clay lands being mixed with lime, and the means will soon be found, economically regulated, and ungrudgingly and beneficially administered. When a result is fairly conceived "ideally," the real performance is more than half attained.

When the land has been dug by the spade, and the lime cinders placed in the intervening trenches of the regular movements of the soil, the moisture in the clay lands, and the access of air through the interstitial cavity of the soil that results from the digging, will dissolve the lime shells; the bulk will swell and heave the land, a large evolvement of heat will follow, the caloric will thoroughly penetrate the aluminous mass, unbind the texture, sunder the particles, and banish the sulphuric acid and water which form a part of the composition of the clay. In order that these objects may be fully accomplished, the quantity of force employed must be able to overcome the resistance, and so completely to expel it as never again to appear in kind or degree. The quantity of lime must preponderate, and completely overpower the nature of the clay; the quickness and violence of the agent must be supported by power, which consists in quantity, or the amount of the force that is being acted. On this principle the whole application rests in the value and utility; for if the clay be more powerful than the lime, the latter body will quickly cease to act, will produce no impression, and sink into utter insignificance. This failure attends many enterprises, and comes from a scanty allowance of means, whereby the resistance is not quashed, and no object is attained. When a result is wished from any enterprise, the power must be overwhelming for the resistance that is opposed—any defence is immediately defeated and so completely prostrated as never again to appear in any shape of resistance or opposition. If the expelled qualities of clay again return, the object is only half attained; a repetition of the process becomes necessary, and a never-ceasing expense is incurred: whereas a complete performance attains the object, and requires not any repetition. It is not here asserted that one bushel of lime to the cubic yard of ground will in every case thoroughly effect the desired purpose of completely altering the composition of clay lands; but the statement is made as an analogical probability, as the plastic and London clays may require more, and a less quantity may suffice for the clays of a weaker texture. Trials must decide.

The force of the heat will expel the sulphuric acid, which will escape as vapour, and will not again be imbibed by the clay, as it does not form any component part of the atmosphere, as in the case of lime being again supplied with carbonic acid gas from the air in which it exists as a portion of it. In this case, one act of expulsion serves the purpose for ever, and no future presence demands a repetition. In the other part of the performance, the spongy porousness of the aluminous earth is thoroughly broken up and sundered by the disruptive agency of the caloric, and so thoroughly dismembered as never again to adhere and form any ductile plasticity, which is the grand characteristic of the family of clays. When the action of the lime has ceased, by reason of the heat being all evolved, the quiet subsidence is a mucilaginous mass of earthy materials, which is easily decomposable, and fit to be used as a soil for growing any crops that may be planted. The texture of the lime has been disrupted and powdered, the clay has been divested of its hurtful quality and noxious ingredients, and the two new formations become amalgamated, and enjoy qualities that are wholly new and altoegther alien to the former existence. In changing condition bodies also change capacity, or the power of receiving and retaining heat, by which they are raised to a higher temperature by a quantity of caloric that bears a certain ratio to the amount necessary to heat other bodies of a like formation and consistence. Heat is both a cause and effect of the change of bodies: it produces the alteration, and is produced by the change, and is well known to be a very powerful means both in forming combinations and in separating substances that have been joined by affinity. The atoms or ultimate particles of bodies unite chemically—the large masses only touch in the surfaces and have no action on each other. Hence all bodies that are intended to be combined must be fused, or reduced to particles; and hence the use of the solvent power of heat evolved by the lime in penetrating and sundering the viscous mass of clay. When bodies unite chemically, the union is always accompanied by a change of temperature; sometimes the temperature sinks, but in by far the greater number of cases it rises. Alumina, or the basic earth of clay, has a strong affinity for lime, and easily melts with it when it exceeds the lime in quantity, but when the lime exceeds fusion does not take place. This affinity expels the sulphuric acid from the clay, with which the lime combines, as it is a homogeneous body, and tends to form unions with most bodies in contact. The clay is mollified, and the lime is slaked by the surrounding moisture, and a product is effected that has little or no resemblance, as water would not be expected to proceed from the union of two gases, or oxygen and hydrogen.

When bodies are united chemically with each other, the separation cannot be effected by filtration or any mechanical means whatever. Heat enables a separation, and must be applied in quantity as directed by the volatility of the substances that are united. Sulphuric acid does not boil till heated to nearly 600°, while water boils at 212°, and as volatilization does not proceed but from above the boiling point, the heat must be able to produce that condition in the liquid substances. Hence, the quantity of lime must be large that is applied to the alteration of clay lands, in order that the force of the heat may volatilize and expel the acid which is contained in the soil.

Affinity is the unknown force which causes the ultimate particles of different bodies to unite together and to remain united. Decomposition is the measure of the strength of affinity, and destruction proceeds from the attraction of certain bodies wholly overpowering the existence of inferior powers, and which are expelled or altogether destroyed. The superiority of the attraction of alumina for lime will overpower the adhesion of the acid, which will be raised by the heat to the state of vapour, and fly off without appearing again, or it is decomposed and wholly destroyed. The water is combined with the lime and solidified ; hence the heat evolved, and the reduction of the lime to a fine powder. Bodies combine from being in different electrical states, or in being positive and negative ; but to what circumstances these conditions are owing cannot be explained. If these electricities constitute two distinct fluids, the surfaces of the bodies may be coated with a quantity of the respective qualities, and from the well-known phenomena of electricity, it can scarcely be doubted that the electricities are not inseparably attached, but capable of being increased or diminished according to the laws which bodies follow with regard to electricity. Hence, it happens that a substance may be in one electrical state when compared with one body, and in another electrical state when compared with another. Thus, oxygen has a great preponderance of negative electricity—it is negative with respect to every other body. Sulphur is negative with regard to most bodies ; but is obviously not so powerfully negative as oxygen. The investigation of this theory is most difficult, and the results are not very conclusive. At all events practical application of substances cannot be directed by the discovery.

The new earthy formation that will result from the mixture of clay and lime, will enjoy the advantages of a higher temperature, an improved capacity, a mollified nature, and a sweetened constitution, which always follows the action of lime and all calcareous matters. The increase of temperature is an acquisition that is not exceeded in value by any benefit that can be conferred upon land in the shape of improvement, as it promotes the action of manures, and advances the health, vigour, and maturity of plants. The coldness of clay lands that is induced by the superabundance of moisture, forms the quality that sinks the value and utility ; the cultivation is retarded, and the maturity is delayed, of every crop that grows upon the ground. The excess of moisture must be removed by draining, and the retentive quality must be abolished by a violent dismemberment of the viscous texture, and so completely performed as never again to assume the original formation. This purpose being effected, an increase in temperature will follow, both from the calorific quality of the lime, and from the constant attendance of that property upon every change of the condition of bodies. A very reasonable opinion may be entertained that the benefit of lime, in any shape or form, consists in its conferring a higher temperature to the land by means of the caloric which it holds, both from its own natural constitution, and from the phlogiston of the fuel, by which the gas was banished and the texture unbound. Clay lands have never been in any way benefited by the scanty applications of lime upon the surface, as clay is a bad conductor of heat, and the quantities of lime that are used are much too small to overcome the repulsive quality of the earth. The exuvial matters are deficient in the quantity necessary to imbibe and retain the caloric, which is itself wanting in the requisite amount to produce a desirable effect. No beneficial change can be done to lands without conferring an increase of temperature ; a cold inert application of any kind will only add to the dormant mass, and increase the difficulty of future actions of benefit. An agent of quick force and obstinate energy must be employed, which both uses and engenders the quality that is sought, and which remains for a permanent utility. Temperature, or more generally the climate, produces all the vast variety of differences that are seen to exist in the animal and vegetable worlds, and it rules with the same influence in the sources of production as on the tempers and formations of the organized substances.

Capacity of bodies signifies the proportional capability of a given quantity of any substance to absorb and retain caloric, or that disposition or property by which various bodies respectively require more or less of this fluid to superinduce any given temperature in a given mass. It has been long known that this capacity varies in different bodies, and that among substances the same body in different states of existence presents equal varieties in its capacity. A change in this respect is producible in three ways—by mechanical compression or dilatation, by chemical combination, or by the action of heat itself. It is a general fact that when a body is enlarged or dilated in its bulk, the capacity is proportionally increased ; and when the bulk is diminished, the property is lessened. The capacities of all bodies are increased in some proportion by the disintegration of the constituent parts, as well by the agency of caloric as by any other cause. This case of change of capacity by the action of heat itself, is perhaps productive of more important effects in nature than either of the other two. By it the quantities of caloric and of cold are alternately absorbed and emitted, which regulate heats and colds that hold the universe in an equilibrium; without it, all boiling water would be dissipated in explosion, and the polar ices would be dissolved in a heat above 32°, if the thaw was not regulated by a degree of cold that proceeds from the caloric that is absorbed by each particle in its solution. The capacity or property of any body to absorb and retain caloric confers upon it the degree of temperature which it enjoys, and this has been shown to exercise a great and lasting influence.

The nature of clay land is qualified in the harshness by the mixing with lime, the viscous clamminess is relaxed, and the temper is rendered gentle and tranquil, pliant and supple. The watery sourness of the soil arises from the quantity of sulphuric acid in union with water: although the acid be not in excess so as to produce a very sensible acidulousness, yet the effect is yielded of a noxious acerbity, which conveys a detriment to every kind of life. Both the acid, and the water in union with it, are completely dissipated by the searching penetration and energetic force of the caloric emitted by the dissolution of the cinders of lime—the texture of the whole mass is so thoroughly disintegrated and reduced, that no part remains untouched, nor any corner unexplored. Not only volatile bodies, as acids and water, yield to its influence, but earths and earthy aggregates are sundered, though not fused, and transformed, though not liquefied; and the alteration is permanent, as the affinity is destroyed for the presence of the noxious inhabitants, which do not again return, but give place to more harmless and beneficial elements, which are induced and brought forward by the new constitution of the soil.

Lime is a calx or residual substance, and along with all calcareous bodies inherits the property of expelling sourness and acidity of every kind, and of introducing a sweetness that is agreeable both to the taste and smell. The surface grasses of sour pasture grounds are improved by a quantity of lime being spread over the land—the coarse herbage is removed, and more grateful plants are brought into use. The earth of clay being divested of the noxious volatile ingredients would remain meagre and inert, and become a mass of dormant particles without cohesion or tendency to combination; but the presence of lime presents an opportunity of wholly new features, and during the violent disturbances that were acted by the energy of the caloric, not only a mechanical mixture may have happened, but a chemical combination may have been consummated. A mechanical mixture is the general limit of the efforts of man, and leads to the chemical union; it affords the ready path to the action of reciprocal affinities, which without its aid would have no opportunity of exerting their mutual influence. The whole art and use of chemistry consist in forming compounds by uniting different bodies with each other; and the best and most skilful adaptation comprehends the knowledge of the auxiliary substances that will effect the decomposition of the body that is the subject of operation, and form the newly united mass of a more benign and useful disposition. For this purpose lime has been selected, as it affords the powerful agent of caloric to penetrate and crumble the earthy mass; has a sweetening residual quality, and confers from its constitution a very large capacity for the purposes of caloric, than which quality no higher recommendation can be attached to any body.

A loamy soil of the richest kind will be formed by the mixture of clay lands with lime, as the aluminous earth affords a strong and durable base for the constitution of the soil. Clay is a chief element in the constitution of all rich lands—it imbibes and retains the necessary moisture, and the presence and action of the other ingredients prevent the hurtful excess, husbands the use, and regulates the expenditure. Calcareous matter is also an essential ingredient in soils, and it will be supplied by the lime that is used to effect the new formation. A clayey loam will be produced that is the most productive of all soils, as it grows green crops and wheat, which are the highest in value of all the plants of the farm. These soils could not yield the value without a large proportion of clay in the elemental composition, which is formed into the rich condition, by the presence and introduction of the other ingredients, as sand and the exuvial matters of organization. Clay and lime in mixture tend to form an artificial marl, of which natural body the fertility is well known. The nearest approaches to it are made in the way now recommended.

The expense has been averaged at £30 per acre, of changing all clay lands into loamy soils of the most productive kinds, and it has been mentioned that the ultimate object must form the primary consideration, and not the ways of doing the action that is proposed. If this latter entertainment be allowed to overrule the deliberation of any project, no enterprize of any importance would ever be commenced or consummated—the frigid calculations of self-interest must be excluded, and the niggardly economy of reimbursing expectations. The project must be placed on the broad pedestal of national benefit, and reared into perfection by the application of general resource. The performance must not rest on the opinions of reference or the answers of ignorance, nor condemned by the jealousy of conceit, or by the dread of innovation. Such beneficial purposes are too often upset by prejudice and overturned by clamour, and very frequently in direct opposition to the evident and acknowledged advantages that would accrue even to the quarter whence the blinded unwillingness has its source. Such an expense must be borne by the national funds, and the repayment made in a fixed yearly per-centage paid from the land, and in such an amount as will effect the liquidation in a reasonable period of time, and without disturbing or impeding the current of action that must be followed after the change of the lands has been done. The grounds will now produce all kinds of green crops in the highest perfection, and the manufacture of these products requires farm buildings of a large extent and a peculiar formation. These appurtenances must be adequately supplied from the same source, or the full value of the changed grounds will not be obtained. The conversion into use of any products is deserving equal attention with the raising of them—the finest articles and the most valuable materials may be wholly spoiled in the process of manufacture, and the greater part of former labour altogether lost. The change of produced articles demands an altered manufacture, and the conversion proceeds on wholly different grounds and a varied application. The larger bulk of a heterogeneous produce will require more outlay in the conversion, and this latter purpose will demand a greater extent of application. These consequences will follow the change that has been proposed.

Loamy lands are, in the general average, at least three times the value of clay lands, except a few cases of the rare quality of the first order. The clays of the shale and of the marine tertiary formations will constitute soils of the highest power of loams, as the staple is deep and abundant, and the elemental constitution of the earth is strong and durable. Hence the value of the new soil may be expected to be four times that of the clayey condition, which is generally poor except in some few localities that enjoy the abundance of manure from large towns. The improvement will consequently increase the yearly value by not much, if anything, less than 30s., or upon safe grounds from 20s. to 30s. an acre. This sum will pay the cost of alteration in some time within twenty or thirty years, a period of time that is not at all outrageous, when the due consideration is made of the vast and incalculable benefits of the application. Four times the value of land must understand four times the quantity of produce from the surface, which will form a very large addition to the supply of the necessaries of life, and tend to cheapen the value of articles of consumption, and enlarge the sphere of their use, which is the just aim and legitimate purpose of every scheme that adapts the earth to its resolves. The resources of the earth have never yet been half developed, by reason of sufficient means not being applied to the performances. Skill and labour exist in the most ample abundance; but the other moving power is ever wanting, from penury, unwillingness, a niggardly economy, want of security, and, worst of all, from the absence of any proper social regulation to meet the exigent demands of the very peculiar necessity that most imperatively exists. Land being made an individual possession and a private speculation, never can obtain the just consideration for securing the objects of its purpose.

Every purpose is a subject of legislation, that has for its object the well-being of man, and for which reason can assign just grounds. Of all intents that can be entertained by the mind of man, or enter into any human consideration, no single one, nor any number of them are any way to be compared with the employment of labour, and the adequate supply of the necessaries of life for the use of the population of any kingdom or country. The natural wants must be supplied before the moral: the cravings of nature admit no excuse. The structure of social and political theories serves only to show the sandiness of the foundation, and the unskilfulness of the architect. The framing of commercial codes and artificial regulations merely discover the ignorance of the compiler—time and circumstances overturn all such baseless fabrics; but practical performances that are done on an enlarged scale of comprehensive benefits, withstand all changes, and never desert the prestige of their just reputation. No government can bestow on its subjects, no legislative enactments can confer on the human race, no class of men have in their power to give to another class, benefits any way comparable with the comforts and blessings that arise from an adequacy of food and raiment, in order to uphold the body and furnish the means of mental development. No state policy can exist unless it be based upon this indispensable foundation; broils, tumults, and discontent will continually assail it: it bears on its front the stamp of imperfection, and without the above primary provision, all systems of education are contemptible and wholly impotent. The extremities of the body receive the impressions, and while the feet are bare and the head uncovered, the emanations of the mind must be miserably deficient, if not wholly wanting. Most writers on this subject either do not know, or overlook the ground on which the whole matter rests—they neglect the foundation in the haste to rear the superstructure. Individual interests have ever been preferred to the general good, and a great misfortune consists in those persons who have power being generally an entire generation in wisdom behind those who are less employed and less conceited. Power being joined with means is capable of converting sterility into fruitfulness, and a wilderness into productive grounds; it can supply the defects of nature by drawing from the storehouse of its bounties—it can fructify the energies of mind and the toils of labour—it can raise human society from the depths of moral depravity to the heights of intellectual grandeur, and convert its most virulent poisons into the most healthy and nutritious juices. Those persons who write about man and the different states and stages of his existence, social, moral, and political, would do well to remember two things—the cultivation of the earth, and the supply of the necessaries of life; for they uphold or overturn all their ideal fabrics.

THE PAST AND THE PRESENT.

The advancement of agriculture has hitherto been of but slow growth; for where experiments required the greater part of a year to perfect them simply, and a series of years to compare them, how could it have been otherwise? To have thus claimed for it the distinction assigned it now as a science, would thirty years ago have been generally ridiculed. The humble tiller of the soil inherited his knowledge from his forefathers: he knew of no system but the four-course, or some other prevailing one of the district in which he resided, and he became, as Stevens somewhere observes, "a mere expletive of the soil, of which he was at best but a mere tiller. Pursuing the same onward course that his forefathers had hitherto carried out, he never dreamed of an improvement; and if one by any chance was hinted at to him, it was met with a grumbling spirit that his landlord never did any thing, and it was his own determination for the future to do less.

If the mind's eye could travel back a century or two, it would be amusing to sketch a farmer of such a period, and to fill-in the picture with the description of implements and live stock that then were in vogue; and by comparing him with one of the present day, we might observe the advancement that has taken place. Still the old songs of the period convey some idea of his character and habits; as well as that luminary of farming knowledge, Thomas Tusser, who reduced the practice of his district into quartrain verse, and concentrated by his own wit the wisdom of those who had gone before, for the benefit of those that were to follow him. How we should like to have a full-length portrait of him, but of which we can only judge by others of the period—the long straight coat, which we are told "buttoned down before"—blue or brown as it might have been—practically exemplifying the thrift he inculcated by holding on through life from the wedding-day to his end; and if the shoes worn by the learned of the period are best exemplified by the type of those presented by the Christ Church scholars, we cannot imagine any other but that slouching gait that it is thought advisable they should exhibit as models for our inspection. The principles of farming knowledge as then practised he has clearly defined, and the thrift of the farmer as practised in his housekeeping matters is described to the very letter. The reason for this is obvious, for nearly the whole of the processes of the farm were carried on by in-door labouring servants; these Jacks and Jills of the establishment requiring the constant and unceasing vigilance of the farmer and his wife, in ordering the application and economy of their household department. It therefore became absolutely necessary that their presence both in the field and at the board should be without intermission, or the same consequences that followed with Dame Durden—another celebrity—would have been exemplified. Few, however, were the farmer's requirements beyond what his farm afforded; his money payments were small indeed, his rent constituting nearly the whole—and even that—a sum merely nominal.

The power of conception, however, ceases at a certain point, and we are unable to trace anything beyond what our senses may have had the power of conveying to the mind. The writers of the period we refer to, however, to some extent have compensated for this deficiency; as in addition to the description given us by Tusser, of the farming processes and thrift of that period, we have one by Bishop Latimer, as set forth in a sermon preached by him before Edward VI.—Wherein he minutely describes the position of his father, who, he stated, was a farmer, and occupied a farm sufficiently large to keep thirty kine and three hundred sheep, with tillage land in proportion, for which he paid a rent of *five pounds a year* at the uttermost; finding, by way of tax, a horse and harness for the king. "He kept," said he, "good hospitality, and gave much alms to the poor, and gave £5 each as the marriage portion of each of my sisters: moreover, he gave me also a goodly education, or I should not this day be preaching before your kingly majesty."

Why Latimer should have preached a sermon of this character upon such an occasion, and at such a period, we are unable to discover; but it is only one of the modes by which knowledge upon particular branches has been handed down to us. As the art of printing became extended, it took a far wider range than had hitherto been the case, until the manners and customs of the succeeding period became minutely described by the novelists and historians that appeared—Fielding, Smollett, Steele, Addison, and others their contemporaries, give us faithful pictures of the various characters that then existed; which even now are read with pleasure, or studied with a more grave reflection.

There may be some of our readers yet who have not read the *Spectator*. To those who have not we recommend its perusal. From no book whatever in the English language have we derived so much information, or found one that has given us so much pleasure in the perusal—the clearness and beauty of the style, and the philosophical reading with which it abounds! In some of the earlier numbers the character of Sir Roger de Coverley is pourtrayed, as doubtless copied from some living personage who then existed. Comparing it with many of his class around us in the present age, we may fairly ejaculate, "Alas! what a falling off is there."

As civilization progresses, the arts and sciences progress also: what was at first but a rude block, becomes by the repeated strokes of the chisel a figure with fair proportions; and ultimately the finished statue—chaste, polished, and refined—is depicted to our view. So of any progressive art like agriculture: its rude mass in process of time assumes a form well enough defined; but it remains for us yet to give the finishing stroke, and that polish which may bring it to appear in that full perfection of which it is susceptible.

A writer, distinguished for his talent and for powerful and nervous description said "that agriculture was a pyramid of such enormous magnitude and proportions, that its dimensions would never be estimated until it had been thrown down so as to exhibit its base." Metaphorical as the description may be supposed, it is nevertheless literally true, when we reflect upon the circumstance that thirty millions are daily fed from a space that the point of a finger barely occupies upon the surface of an 18-inch terrestrial globe.

Well may agriculture then be ranked as a science, combining as it does every other science in its development. The time has doubtless arrived when its professors have taken a station that will have the power of bringing the learning and talent of the kingdom to its aid. The leading men of knowledge and science are now uniting to do it homage, and to bring their united stores to its assistance: under auspices so great, and so largely bestowed, who can contemplate the result? But we may without exaggeration say that it is such as the people of no other country has attempted, and which no other people but that of England could have effected.

THE PROPOSED DECIMAL SYSTEM OF CALCULATION.

We have devoted more than one article to the exertions which have been made for many years to obtain a decimal system of money of account and of circulation. This would be a great step gained; but it would be incomplete unless accompanied by a system of weights and measures decimally divided. Parliamentary committees, as we have said, have investigated the question again and again, and have reported in favour of the retention of the pound as our unit of account, dividing it into 1,000 parts. In this the majority of the witnesses concurred who were examined before the several committees. The inquiry had commenced, it will be remembered, some thirty years back, as to the expediency of decimalizing our weights and measures. In the course of this investigation, the committees arrived at the conclusion that it would be best to begin with our money, and to postpone the question of weights and measures for the present. The witnesses examined before these committees were those best qualified to give an opinion from their position in politics, in science, and in commerce. We have noticed also the formation of a Decimal Association, the object of which is to stimulate the Government, and to prepare the public for the change. They likewise advocate retention of the pound as the unit decimally divided, and the issue of coins representing its decimal parts, as the best means of rendering the subject familiar to the uneducated classes. The recent Industrial Exhibition at Paris has given rise to another association, which proposes to commence on opposite principles, with the adoption of the French metrical system of weights and measures. They also advocate the adoption of the French franc as the monetary unit; but on this point there appears to be a difference of opinion among the members, and it is left something very like an open question.

The starting point of the French metrical system is derived from nature, being the ten-millionth part of the quadrant of the meridian; from the equator to the pole, measured on an area between Dunkirk and Barcelona by some of the most eminent continental savans at the close of the last century. This is called the *metre*, and is equal to 39.371 English inches. From this all the units of length, superficies, weight, and volume, as well as the monetary unit, are derived. Its multiples are the decametre, hectometre, kilometre, myriometre, containing respectively ten, one hundred, one thousand, and ten thousand metres. The decimal divisions of the metre are the decimetre, the centimetre, the millimetre, and the killimetre; or the tenth, the hundredth, the thousandth, and the ten-thousandth part of the metre. The element of superficial measure is the *are*, or square decametre; the *stere*, or cubic metre, is the element of solid measure; the *litre*, or cubic decimetre, is the element of all liquid measure; and the *gramme*, or weight of a cubic centimetre of distilled water at a given temperature, is the metrical element of all weights. Much importance is attached to these names. To educated classes they would be intelligible enough; but we should fear the unlearned would find it difficult to comprehend the difference between the deca and the deci, the kilo and killi. As an argument in favour of the adoption of the

French metrical system, we are told of the benefits which have resulted from its adoption in other countries—in Sardinia, for instance, and the States of the German Zolverein. We greatly question, however, whether it would not produce so great inconvenience in this country among the bulk of the population, as to come under the category of an impracticable improvement. Between England and France there appears to be a drawn battle in these matters—happily the only battle they now wage, and we trust will ever wage. Our pound sterling has been described by some of the witnesses as a national institution; and our sovereign may be said to be cosmopolitan, for it circulates all over the world. On the other hand, the franc of Switzerland—though of the same value as the French franc—is not received in that country from which it derives its origin. This cosmopolitan character of the sovereign is not, however, without its inconveniences, as it compels us to be at the expense of coining largely for other nations as well as ourselves. We have the best coin, the French the most perfect system of weights and measures. Let us, then, retain the sovereign, dividing it into 1,000 farthings instead of 960; and having done that, and having got a coinage to correspond with this decimal division of our money of account, let us then turn our attention to the decimalisationof our weights and measures. To us it appears that the easiest mode of effecting this would be to retain the yard and the pound avoirdupois; to divide them decimally for the lower denominations, and use decimal multiples of them for the higher ones. In weights, we have at present the customary Smithfield stone of eight and the legal stone of fourteen pounds. We can see no reason why a stone of ten pounds should not be substituted for them both, and why the hundred-weight should not be restored to what it doubtless was originally, one hundred pounds.

If, again, the ounce were declared to be a tenth part of a pound, and were divided into tenths and hundredths, the new system would very readily accommodate itself to old habits and modes of thought; and we should have quite as low a denomination of weight and measure as would be required for all the ordinary purposes of commerce, while no derangement of permanent contracts would take place. We offer these views, however, subject to further consideration, when we shall have seen the report of the first Decimal Committee which considered the subject of weights and measures. There will be ample time for considering that subject when we shall have obtained a decimal division of our present money of account and of circulation; and if in the interval it can be shown that the introduction of the French weights and measures will be attended with greater advantages than by a decimal division of our own, let us then, we say, have the French metrical system, but the franc as our monetary unit—never! In looking at this question, we are to consider what would be attended with the least inconvenience to our permanent contracts and to the bulk of our people; the conveniences which would accrue from the adoption of the French system to our foreign commerce ought not be put in competition with the home interests which would be affected. Our foreign merchants have plenty of clerks to make the necessary calculations for converting English money into foreign, and *vice versâ*: our *farmers* and our *labourers* havenot.

SHEEP SHEARING.

The year rolls round and steals away so fast that one feels continually outstripped. The season for shearing sheep has again returned, "clipping time is come," and a highly interesting time it is to every flockmaster; and although the bygone days are never to return, yet one cannot help looking back upon them with youthful interest. We have a vivid recollection of the hilarious days of our boyhood, when these seasons were marked and upheld as the most joyous and festive meetings of the year; they were conducted upon the broadest principles of old English hospitality; in fact, being the best and merriest of the old English merry-makings. The stuffed chine and old ale for the "clippers"—the fermity and fruit for the youngsters for the day, followed by a substantial supper at night for all engaged, combining all parties, from the master to the cowboy, and frequently their families and friends; the whole concluded by a cheerful dance on the green-sward at night.

We are not of those who would in the slightest possible degree pander to the uproarious or ungovernable frivolities of such meetings, still less to the dissipation and the vicious engenderings they may be calculated to foster—these cannot be too strongly condemned, and must be carefully avoided—but we do like to see good common-sense men and women, youths, girls, and children, heartily enjoying a harmless frolic—the joyous face, the hearty laugh, the kindred spirits ever promoting each other's pleasures under the hopeful, the subdued, and generous feeling that they meet to do each other good. We yield to none in earnest desire and active endeavour to promote the good, the true, and everlasting interests of all around us in its highest sense; but, nevertheless, we do not condemn the village gathering and rural sports, or the village fair and village merry-making. We wish to perpetuate every really good old English feeling—that kindly brotherhood which cements love and kindred fellowship most truly amongst the lower orders, and makes them at all times ready to help and do good offices for each other. Let us inculcate the kindly feelings that will pave the way in some reasonable measure for those impressions, which all experience who love and serve their Great Creator.

But to our subject, *sheep-shearing:* It is the return of "the first" of the farmer's reapings or harvests. *Wool harvest!* who ever heard the term? Be that as it may, it is, nevertheless, the first in-gathering of the farmer's first crop—the crop of wool—and no mean crop either. The farmer, be it remembered, has but few, very few, sources from which his return of income for his continuous and lengthened outlay of capital is derived throughout the year. This is his first, and with it we do not wonder that it should bring joyous feelings. We should wonder did it not; for despite his propensity to grumble—it is his way—none is more susceptible of the generous, the hearty, and deep feeling of gratitude to his Maker for his many blessings than the frank, open-hearted, honest British farmer, dependent as he is in so many—ways upon His all-wise providence for fruitful seasons, causing joy and gladness to fill the land.

This then, we say, is the farmer's first annual return of income; and it behoves him to see that he derives the greatest possible return from it. To this end, we would give a few words of plain, practical direction.

Sheep Washing.—It is very essential, in securing a good clip and a good crop of wool, that it be well washed. The wool buyer is always delighted to see a bright, cleanly pile of wool; and the seller is sure of the best price that can be afforded. A dark, stained, and "soily" parcel is always hard to quit, and invariably fetches a bad price. Good washing is the main thing, but it is not all; do what you will, with many flocks you cannot wash the wool white. Wool partakes much of the colour and impurities of the soil upon which the sheep is grazed. The fen sheep produce a fleece of a dingy bluish colour; on the red-land soils it is tinted of a brownish-red; on the Gloucestershire stony gravels, it is almost of orange tinge; in coal districts, dirty and smoky in its colour, &c., &c.; besides, the sheep are very foolishly smeared with various salving mixtures—tar, ruddle, ochre, &c. Now, where whiteness is required in the manufacture, these colouring matters do great injury, and the particles of detrimental soil also do much hurt. The *yolk*, also, is liable to do great injury, if not properly promoted and fostered. It is that unctuous, adhesive, waxy matter found in the fleece, rendering it oily, soft, pliable, and strong in fibre; failing a sufficiency of yolk, it is harsh, dry, and weak in staple. The condition and prosperity of the fleece is greatly dependent upon the depasturing or management of the flock. Bad keeping makes bad wool; good keeping good wool, and plenty of it. If the flock be badly wintered, or circumstances arise to prevent the flock being satisfactorily kept at any time, then such remedies for the improvement of the wool should be adopted as seem most desirable. Salving with good mercurial ointment is good practice; it supples the wool and purifies the skin. Dipping in, or dressing with fag-water preparations, is conducive to the growth of the fleece. How are these fleeces of various colours and dingy stains to be cleansed and washed white? Too much must not be expected. Let it be borne in mind, however, that the yolk itself is of a milky, saponaceous character; and if great care is taken to increase this yolk in the fleece some weeks before washing, either by dressing as above, by extra nutritious keeping, or by allowing them to remain long in their wool in warm weather, much may be done. The yolk is the soap—animal soap, good and plentiful; it dissolves in water—the warmer the better, we think. Now, in this lies the secret; and every flockmaster knowing this must use his best judgment in washing, so as to make the best use of this animal soap to cleanse its own fleece. The writer usually washes his flock in a pond containing much brackish (saltish) water; and he is of opinion that such water has much cleansing power. It is also customary in the district for many hundreds—nay, many thousands—of sheep to be washed in one large pond of standing water, and for the most part in the same water. In many respects it is very objectionable; but it is in reality like throwing the sheep into an alkaline vat. The colour and impurities are washed away, and if arrangements could be made to pass them through clean water immediately afterwards, perhaps few washings would be more efficacious. Occasionally the flock receives a thorough drenching from some heavy passing shower: no wool is found whiter when it is thus rinced. It would be useful to the flockmaster if experiments of this character were tried and recorded; running streams are well adapted for this washing; the vat and subsequent rincing may readily be accomplished by arrangement.

The Shearing.—This is a skilful operation, and when well done adds greatly to the beauty of a well-formed animal; the regular and evenly-cut narrow strips which we see on some well-fed sheep denotes no ordinary skill on the part of the operator. We do not advocate other than plain shearing. We do not like to see a sheep with a skin cut into diagrams—a curve here, a square there; it may exhibit greater skill, but it is not business-like. The ordinary course is to lay the sheep on a raised platform (clipping board), well covered with a stuffed cloth, or the machine-cloth doubled into several folds, with straw beneath; lay it on its side, turn the head, and cut a shear down the neck and side to the shoulder, then raise it up, shear the breast, belly, and the other side, as far down as the thigh; then again lay it down, and shear the thigh, tail, and as far under the other thigh as can be fairly reached; then raise it up, put some wool for it to sit upon, and finish the other side.

Snips.—These are the accidental cuts into the skin itself, which even the best operators cannot altogether avoid. They should be immediately dressed with some innoxious drying powder, adhesive, and not irritating. Lime that has lost its causticity is a good application, and mixed with a little fine soot, will always show the application by its colour. In cold rainy weather much injury often arises from neglected snips; and in hot sunny weather the little black fly makes sad work. Many common homely applications are used as preventives:—cow-dung, continually applied; white paint; thin sheeting, cut to fit, and slightly smeared with pitch; assafœtida; mercurial ointment, &c., &c. Our own remedy is cow or sheep's dung, keeping the sores constantly covered: it is the most simple, always at hand, by no means hurtful, and will often form a dry covering till the sore is healed. Should swellings ensue, as they often will in cold weather, then the animal should be taken under cover, hot fomentations applied, and be kept warm. Great care should be taken to prevent colds afterwards, or gangrene will soon supervene. We do not approve of *gangrenous oils*, and the like : the snip is a simple wound, influenced by cold, &c., and must be subdued, and suppuration promoted ; in fact, treated as a simple wound, taking care the animal does not acquire fresh cold.

Marking.—This is most easily done by an admixture of pitch with a small portion of tar, made hot; the marking-iron being dipped in, and stamped upon the skin, makes the required mark plain. It is soon dry, and will last a long time.

Wool-winding.—This is a very important operation connected with sheep-shearing, and is often most negligently performed. The wool is generally wound by a class of men who take certain districts or farms, and wind the wool at a certain price per score fleeces ; their object is to get through their work and earn money quickly. Formerly, these men were sworn winders, to prevent imposture upon the woolstapler : now it is free. The great object should be to make the most of every fleece, and not squeeze it up into any compressed form ; it ought to be fully opened and spread out on a table or otherwise, every adhering part carefully drawn apart, so as to exhibit the staple in its fulness ; all dirt, locks, or improper parts removed. The fleece is then parted down the back, the two halves laid together, and wound up in as large a bundle as possible consistent with safety in securing the fleece from opening out again.

Piling the Wool.—Many flockmasters keep their respective kinds of wool separate, as ewe, hogg, and wether wool. This is a good practice, and it is thus easy to be examined by the wool buyer. This is more particularly the custom with short-wool flockmasters ; long-wool flockmasters generally put all into one mingled pile—of course taking care that it be a fair pile throughout, and that the ends of the fleeces presented for examination shall be a fair sample of the whole. The place of piling should be dry and clean, and free from vermin ; and if all dust can be kept away, the better. Of course the wool is piled by each fleece being laid on its side in continuous rows, and the height of the pile is according to the taste of the piler. It is, however, best to avoid too much pressure ; therefore the pile should not be carried too high, if intended for early sale ; but if it is to lie long in pile, then the more air that is excluded the better.

REPORT OF THE ROYAL AGRICULTURAL SOCIETY.

The election of His Imperial Majesty Napoleon III., Emperor of France, to be an honorary member of the Royal Agricultural Society of England, the prosperous state of the finances of the Society, the important discoveries and labours of Professor Way, the withdrawing of the £1000 prize for a substitute for Peruvian guano, Professor Simonds and the Veterinary College, the improvement of our labouring population, the Chelmsford meeting, and Paris meeting, with all their associations, and though last, not least, Lord Portman's able remarks on draining, are obviously topics far above mediocrity, each demanding more than a common-place notice. Several of them have very recently engaged our pen. The French and English meetings will soon fill the columns of every journal in the kingdom ; let us, therefore, for the present, confine our observations to two—our labourers and drainage.

It is high time the real position of the agricultural labourer were thoroughly understood. Accustomed to a surplus population, to groaning under a grievous load of poor-rates, to the cringing subserviency of a pauper peasantry, and to the ever dunning cry for labour, the rural mind, more prone, perhaps, to contemplate these things in the experience of the past, than entertain them in the grave probabilities of the future, is liable to overlook the rapid progression of the present, and the ultimate position which the labouring man must occupy in the social fabric.

We refer here to steam culture, home and colonial, and the necessity for making timely provision for it. That the application of steam to the cultivation of the soil will create a revolution in the labour market by the introduction of a new system of things, is a proposition the truth of which need not be questioned ; for it has done so in all similar cases, and cannot fail to do so in this.

True, it may be said ; but its realization is too far distant to have any general influence upon the present state of the labourer, and the duty of landlord and tenant to improve his condition. This is a work of time and degrees, and ought to be proceeded with immediately by them, for the sake of the present generation.

Granted. But what sort of cottages and gardens, obviously among the first improvements at issue, ought landlords to erect? what the number? and what the education which ought to be placed within the reach of the labourers on their estates? This latter question—the school and school-master—is easily answered ; for the experience of the rising generation will be admitted as falling within the period of steam-cultivation. But when we call upon landlords to put their hands in their pockets to provide household accommodation for labourers only earning 12s. per week when to-morrow they may demand 20s., it is quite a different thing.

It is very evident, therefore, that a superior class of cottages to those now recommended by the Society, or to those generally contemplated, should be erected ; and that as steam will require a greater number of labourers, than horses as a motive power do at present, there will be no risk of building too many. It is also evident that this new state of things will more imperatively demand resident labourers on every farm sufficient to perform its work than the old ; so that no difficulty need arise as to situation. Thus far both sides of the question appear to harmonize, so that landlords may at once make the necessary preparation to commence and keep pace with the progress of things, and their tenants to reciprocate with them in the payment of interest on capital invested. Neither need be afraid of the increase of capital and interest involved—for steam and the higher wages of the labouring-man will do more than pay for all. Their greatest apprehensions may be directed to those "penny wise and pound foolish" calculations which so frequently characterize the first steps taken in agricultural progress, before results are experimentally known.

Having thus disposed of steam, we now come to examine the village system of the South, bothies and bondage systems of the North, and small holdings of the sister-country, in order to see what improvements can be effected in them; and to avoid making invidious comparisons, we may at once conclude them the offspring of a period long out of date, leading us back to feudal times with their patriarchal associations, when the labouring population of this country were bought and sold with the land which gave them birth. Instituted to meet the wants of a barbarous age, villages, the first in order, can hardly be expected to harmonize with the advanced civilization and refinement of the present; while at the same time they are not without advantages and associations which our labourers would not like to part with hurriedly; but unfortunately evils predominate to such an extent as to cloud the whole, rendering improvement in such places almost hopeless. One thing, among many, is deserving of special notice, viz., the fact that village landlords, seeing that labourers must at no distant date reside upon the farms on which they are employed, thus leaving their present tenements empty, have no inducement to improve them. On the contrary, with such prospects, their obvious course is to patch and repair, leaving them subject to all the tear, wear, and dilapidation which characterise them. Such has been their condition ever since we knew them, and to all appearances will continue to be so until steam studs every farm with cottages and gardens of a style in keeping with the progress of science, or that subdivision of labour now taking place in agriculture.

With regard to bothies, a dozen highland women in one, and as many lowland men in another, is just, we should say, enough for any Scotch farmer to keep within the bounds of decency; at least it would be felt to be so under the influence of a more southern sun. True it is that Scotch labourers are more cautious and provident in "buckling together in wedlock" than English; a fact amply borne out by the greater preponderance of greyheaded old maids and bachelors among them. But with all this in their favour, we despair of our northern neighbours ever being able to improve upon this system.

How, then, are we to dispose of our young "lads and lasses?" is, doubtless, that which will ever prove the thorny knot of the question. To propose the farmer's kitchen is going back to patriarchal times out of date, when there was little or no distinction between the ploughman's son and the farmer's daughter, provided the priest and the landlord were agreeable; but although the ninth article of the Austrian and Roman concordat still commences with "*auctorem fidei*," yet our priests and landlords having now lost the power of wielding this sacerdotal spell successfully, we can see little prospects of a return to family arrangements of this kind.

In all the other arts the class in question are left to shift for themselves, young men and women renting a bed-room at so much per week when they cannot find accommodation with their parents, and the practice is also common among farm labourers; so that the question arises, Ought the new cottages we propose for steam culture to be sufficiently large that every cottager should be able to let a bed room or two, according to the size of his family, at so much per week, to his unmarried fellow-labourers on the farm? In the former case, a good bed, a pious example on the part of the householder, a separate apartment, and weekly tenancy, are found better restraints upon youth, than the old patriarchal system of master and man messing together under yearly agreements; while it affords them a better opportunity of joining libraries, &c., and reading according to their respective tastes—separate apartments allowing the mental faculties to develop themselves; and the same rule would, no doubt, hold true among agricultural labourers, especially when elevated in education and pecuniary circumstances, as they must of necessity be, under the improved state of things contemplated. It is the want of this separate accommodation which at present appears to be so seriously felt among our agricultural labourers in England, as well as in Scotland and Ireland—one scabbed sheep in a family affecting the whole.

The above, it will be seen, is but a modification of the "bonded system"—falsely so called; the only difference being that in the North, the Scotch labourer agrees either to board or let a bed-room at so much per annum to his employer, in behalf of a servant; whereas, in England, the tenancy is weekly, and the agreement directly from the cottager by the unmarried labourer himself, or herself, as the case may be. This, however, in practice, is a very wide distinction.

About the bonded system there appears to be a good deal of misconception, both as to its origin and character. When it first arose, it was a source of profit to the cottager, money being then made by hand-spinning. It was no rare thing, then, to see a dozen spinning-wheels in a farm-house, bringing in to the mistress a round sum weekly, farmers monopolising the craft, to the exclusion of their cottagers, over the majority of the northern counties, save what the hands of their wives could make. It was otherwise among the more intelligent and wealthy farmers of East Lothian, and some of the adjoining counties, who gave the profits of spinning, or a more liberal share of them, to their cottagers; hence the origin of the bondage system. So long as hand-spinning lasted cottagers had a profit in boarding the servants of their employer; but when it was superseded it became otherwise; and now the system is an evil, because the allowance for board is too little, the household accommodation wholly insufficient, the length of term too long, and the agreement not directly between the cottager and his boarder.

And lastly, the fact that the small holdings of the sister-country are disappearing before the advance which is taking place in wages and the more regular employment of labourers is the best proof that they are not adapted for the improvements of modern times. The period has now arrived when the Irish labourer must receive equal-handed justice with his fellows of the United Kingdom; and in the great progress now taking place in the agriculture of the sister-country, it is to be hoped her landlords will not overlook the best interest of their estates in the erection of farm cottages, and the approaching demands which steam culture is about to make in this respect.

Our remarks on this division of our subject having extended to a greater length than contemplated, our observations on drainage must of necessity be postponed, as we cannot otherwise do justice to the sound views taken of it by Lord Portman. The condition of our labourers must ever harmonize with that of our colonial empire; so that in calculating the effects of steam culture at home, we must not forget its co-agency in our colonies—a branch of our subject we may at some future occasion revert to with more time and space.

OBSERVATIONS ON THE RELATION OF PLANTS UNDER CULTIVATION TO THE MORE IMPORTANT CONSTITUENTS OF MANURE.

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(From "*Zeitschrift für deutche Landwirthe,*" Jahrgang 6, s. 105.)

In a Treatise, "On the relation of Chemistry to Agriculture, and on the Chemico-Agricultural Researches of Mr. J. B. Lawes," Baron Liebig has quoted a passage from my work ("The Fundamental Natural Laws of Agriculture"), and has made some remarks thereon, which prompt me to a reply.

I may be allowed here to give the passage in question, with somewhat of its context, especially as therein are embodied what I hold to be the only correct views, in regard to the tendency of land to become exhausted during the cultivation of certain groups of plants, and to the relation of those plants to the more important constituents of manure.

It is as follows (vol. ii., p. 449 *et seq.*): "The general result of the inquiries and discussions referred to in this chapter, may be shortly and summarily stated as follows:—

Nitrogen. Phosphoric Acid. Potash.
Cereals. Root crops. Clover, Lucerne, &c.
Potatoes. Leguminous Corn crops.
Oil and other economic crops.

"The meaning of this summary is easily explained. The *cereals* require especially an abundance of soluble nitrogenous compounds. In the cultivation of these crops, the deficiency of the requisite nitrogenous nourishment in the soil, is in most cases the only source of its exhaustion; next to the chemical compounds of nitrogen comes phosphoric acid, and lastly potash. If clover, lucerne, and other leguminous fodder-plants, do not flourish under circumstances in other respects favourable, this most probably arises, either from the absence, or from the presence in too small quantities, of available potash; a second constituent of importance in the cultivation of these fodder-crops, is, in an *agricultural* point of view, phosphoric acid; while nitrogenous compounds are of less importance for these crops. In the growth of *roots*, phosphoric acid is the chief agent, especially in combination with lime; the application of green manure has also a striking effect, chiefly because it affords a source of carbonic acid in the soil, which essentially facilitates the assimilation of phosphate of lime by the plant; the supply of soluble nitrogenous and potash compounds is, for these crops, of comparatively less importance. Potatoes require for their vigorous growth both nitrogen and phosphoric acid; and in a less degree, a direct supply of the alkalies. Leguminous corn-crops, on the contrary, yield a good return for a manure rich in potash and phosphoric acid; while purely nitrogenous compounds have a less decided influence on the growth of these plants. Finally, oil-crops, and other so-called "economic crops" used in commerce, only yield a good result if all three of the above important constituents of manure are supplied to the soil for their cultivation, in ample quantity, and in soluble form.

"If we compare the facts above mentioned, derived directly from experience and from numerous field experiments, with the chemical composition of the crops, and with the quantity of the essential constituents of manure which are contained in the produce of a given surface of land, we arrive at the conviction, that the exhaustion of the soil caused by the cultivation of different crops, stands in no *direct* relation to the quantity and kind of the mineral or organic ingredients contained in the crops; and further, that the *pure Mineral Theory*, founded, and formerly defended by Liebig, is not confirmed by the practical experience of farmers.

"In respect to leguminous fodder-crops, and, perhaps also leguminous corn-crops, we may assume that their abundant growth is, in a chemical point of view, almost exclusively dependent on the supply of mineral* food; especially of the alkalies and phosphoric acid. Roots contain proportionately little phosphoric acid, and a large amount of potash; and yet the first-named substance is eminently fitted to aid the growth of all root-crops. Grain-crops contain about one-half less nitrogen than leguminous corn and fodder-crops; and yet, for their culture, a rich supply of soluble nitrogenous substances is necessary: whilst the latter are contented with it in greater moderation. We find in these facts a confirmation of the statement already made in the beginning of this chapter—*that individual cultivated plants, by virtue of the peculiar structure of their roots and of their leaves, possess the power of drawing nourishment from the soil, or from the atmosphere, in very different degrees.*"

In the face of such conclusions, no one but Baron Liebeg would deny the possibility of progress. It must be taken as a proof of the advance which agricultural chemistry has made in recent times, that from numerous researches and accurate observations, such general conclusions can be drawn. The views which have been here briefly given, concerning the relation of individual groups of cultivated plants to the several constituents of manure, have been in substance shared by all those who, *paying due regard to the existing conditions of the production of cultivated plants on the large scale*, have, in England, France, and Germany, occupied themselves during the last ten years with the study of agricultural chemistry. It is, indeed, only since experiments in the direction above indicated have been undertaken, that such efforts have had a direct bearing upon practice, and have found a general recognition among farmers.

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* According to the generally admitted use of language, we understand by the term mineral aliments, only the incombustible constituents of plants; whereas the nitrogenous compounds in agricultural use, are either organic substances, or have an organic origin.

In my work, above-mentioned, I have endeavoured very clearly to separate pure science—the general principles of the nourishment of plants—from the application of those principles to the known circumstances of practice. By far the larger portion of the work is devoted to the consideration and probable solution, as viewed from the position of physical science, of questions important in a practical point of view. In such an inquiry—considering the extent of the work, and the difficulty of the undertaking—I could scarcely expect that some errors, both in theory and practice, and especially in applying the results of contemporaneous researches, would not creep in; but little did I expect that my views on the proximate explanation of the exhaustion of land through cultivation, would be submitted to an insulting, and, as it seems to me, a most unjust attack.

It is certain that, according to their nature, mineral compounds contribute to the formation of vegetable matter; and moreover, that they must be supplied to the growing plant in a soluble form. This is a truth which at the present time demands no further proof. No one of these compounds, however small its quantity in the mature plant, but which is to be considered an *essential* constituent of it, can be entirely dispensed with, either in the soil or in the surrounding atmosphere; it is only when *all* the various nutritive constituents are available to the plant that they produce a sound and healthy development. If on any given soil a full crop be grown and removed from the land, the soil, according to the description of the cultivated plant, will become more or less deficient in those constituents essential to its growth, which, from their nature, cannot be derived from the surrounding atmosphere. The capability of the soil to produce an abundant crop, sooner or later diminishes; either the general fertility of the land is lessened, or it becomes especially unfit for the growth of a particular cultivated plant. If the constituents which the soil has lost by the crop be returned to it in like form and quantity, then its original chemical condition will be restored, and probably also its original fertility for the plant in question. The quantity and kind of these substances will be indicated by chemical analysis of the ripe produce, provided that, during the growth of the plant no single important constituent of the soil has in greater or less degree been dissipated, as appears to be generally the case with cereals, and perhaps with all corn crops—a circumstance to which I shall call attention further on. Those constituents which would remain as *ash* after burning the crop, have been derived exclusively from the soil. Carbonic acid, which is such an important element in the formation of the dry vegetable substance, is contained in sufficient quantity in the surrounding atmosphere, and is enabled to enter the organism of the plant by means of the vital agency of the leaves. The development of this substance from decaying manure has a favourable influence on the growth of the plant, chiefly because certain mineral elements, which are insoluble in pure water, are by its means rendered available for the plant; besides which, the humus-substances have an indirect beneficial action on the *mechanical* and *physical* condition of the soil. Lastly, the nitrogen which is contained in the crop, must be supplied to the growing plant almost exclusively in the form of ammonia. In the cultivation of the cereals under the ordinary conditions of agriculture, about half the ammonia necessary for a rich crop is supplied by the atmosphere; the other half must be supplied to the plant in the form of manure.

After the foregoing, it is surely the simplest answer to the question proposed by Baron Liebig—namely, By what means is the fertility of the soil, when diminished by cultivation, to be restored?—that the soil-constituents must be returned to the field in the same quantities in which they have been withdrawn from it by the crop. This principle has indeed been adopted in agriculture from time immemorial; inasmuch as in the farm-manure everywhere employed, the constituents withdrawn from the soil in the crop are returned again to the arable land; and usually, in the produce of the meadow, and in the matters derived from without in the form of night-soil, ashes, lime, &c., a compensation is made to the field for the products sent to market (milk, cattle, corn, &c.). Very different, however, must the answer be, if we are asked the following questions, so eminently important in a practical point of view:—

By what means, under the ordinary conditions of agriculture in our temperate climate, can we either partially or wholly supply the place of farm-yard manure?

In what way can we increase the previous productive capability of the land?

Of what description must be the so-called artificial or concentrated manures, if, whether applied alone or in combination with farm-yard manure, they are in the generality of cases to be depended upon for a *remunerative* and certain result?

To such questions Baron Liebig seems to have no other answer to give, than that in this case the total amount of the soluble and nutritive soil-constituents must be increased in the proportions which a chemical analysis of the crop would indicate.

Baron Liebig's idea of returning to the soil the nutritive plant-constituents, in the quantity and quality indicated by the analysis of the crop, would be correct (supposing that, on the score of cost, they could be practically employed), only provided the plant-food were everywhere present in the soil, exactly in the proportion most appropriate for the growth of any particular plant, of which it was wished to grow a full crop year after year; in which case, in order to leave this exact relation undisturbed, it would become necessary to return exactly those soil-constituents which had been taken off in the crop. But this is very rarely the case: generally many of the nutritive elements are already present in such abundance that it would be wholly useless (or, at least, the benefit would be in no way proportionate to the cost), to supply them to the soil; whilst, other essential elements may be more easily exhausted, and a supply of these exclusively would suffice to raise the soil to its highest productiveness. It is of the greatest interest for the farmer to know, that *it is not necessary for every constituent essential to the growth of a cultivated plant to be supplied in the manure employed for the production of the particular plant in question;* moreover, that different cultivated plants give results in very different degrees by the direct use of particular constituents of manure, and that the requisite quantity and description of such fertilizing substance cannot with any certainty be ascertained by a chemical analysis of the crop.

The natural fertility of the soil—its capability of producing certain crops without a fresh supply of manure—cannot with certainty be predicated by a consideration of its geognostic relations: almost as little from a complete and careful chemical examination of the soil and subsoil: since, although we know the description of the constituents necessary for the production of plants, yet we do not know in what quantity, and scarcely in what form and combination, they must exist in the soil to yield a maximum produce of any given crop. It is only by direct experiment, conducted on plots of land sufficiently large, and under the most varied relations of soil and climate, that we can learn with any certainty what, in regard to the chemical properties of the soil, must be considered as the *rule*, and what as the exception. During the last ten or fifteen years, high farming has made great progress; and the possibility of speedily raising land to its highest point of productiveness by the application of various artificial or natural (so-called) concentrated manures, is admitted. Especially in England and Germany, very many accurate experiments have been made, in which only single or individual nutritive elements have been supplied to the soil. These researches, of the number and practical value of which Baron Liebig scarcely seems to have a proper idea, have, as a whole, afforded the following results:—

1. Beyond all other constituents of manure, nitrogen in chemical combination promotes the growth and development of cultivated plants in the most remarkable degree. Under all circumstances of soil and climate, highly nitrogenous manures pre-eminently exert a certain and beneficial action.

2. Next to nitrogen, the soil most easily suffers a sensible deficiency in *phosphoric acid;* a direct addition of it, therefore, frequently contributes to an increase of the crops.

3. The fixed alkalies, applied alone, far less frequently materially increase the productiveness of the land than the two above-mentioned substances; especially is little importance to be attached to their presence in the so-called artificial or concentrated manures.

4. Of the least importance, in an agricultural point of view, is the direct addition of soluble silica to the soil.

In regard to the relation of individual groups of cultivated plants to the direct supply of individual nutritive elements, the following is established as the rule:—

1. Manures rich in nitrogen, especially pure ammoniacal and nitric acid salts, have the most striking and certain effect in the cultivation of the cereals; it is necessary, therefore, always to employ such manures more immediately for the culture of these crops.

2. Manures rich in phosphoric acid have an especially favourable action when supplied to root crops; particularly to turnips, and perhaps also to all bulbous plants.

3. The fixed alkalies and their compounds are not, under the usually existing conditions of the soil, calculated to aid the growth of the cereals and root crops in a remunerative degree; but if they can be obtained cheaply, they may sometimes be employed with advantage as a top dressing to young clover, lucerne, and other plants which are used as green food, and which do not remain on the land to ripen.

The excellent researches respecting manures, which have been conducted by Lawes and Gilbert with such praiseworthy perseverance, are not alone the foundation of the above conclusions; those researches have met with such universal recognition, chiefly because they clearly and definitively prove, that which had been either previously or contemporaneously, and is now every year in thousands of other experiments, observed.

I will now take a brief survey of some of the conditions to which agriculture with us, and in almost all European countries, is at present subject, in order that we may thereby attain a position from which to consider the proper application of certain purchased manures. If we would point out to the farmer the means by which he may advantageously enhance the fertility of his land, we must rightly understand and appreciate the position of agriculture as at present conducted, *in order that it may be possible to make from this position a gradual advance.* It would be most undesirable that the farmer should suddenly, and at a jump, pass from one mode of conducting his operations to another which is quite different; and it is quite superfluous for him to occupy himself with those speculations in agricultural chemistry, which can never possess any practical importance for agriculture so long as its existing relations remain unchanged.

There are what are called heavy or clayey, and light or sandy soils. The extremes in either direction are unfavourable to cultivation. In the first, because they oppose too great mechanical resistance to the implements of culture and to the roots of plants, as well as to the oxydating and disintegrating action of the air; the second, because they allow the constituents of manure, important to the nourishment of plants, too readily to pass into the subsoil, or to evaporate into the atmosphere—and also because they afford to the plant too loose and generally too insecure a root-hold. Lands capable of cultivation have either been actually under cultivation for some time, or they exist as wood, meadow, or pasture; or they lie waste as common or swamp, though still capable, by suitable management, of being brought under culture as new land. We shall at present consider the former—the land which has been already for some time under cultivation. And it is precisely this which we must always clearly keep in view in chemico-agricultural inquiries, for it is land in this condition on which the practical value of the discoveries of modern times must be tested.

Land which has been long under cultivation will have been sown in uninterrupted succession with certain crops, and its exhausted fertility will have been from time to time restored by manure. This manure is generally the so-called stable and yard manure. This will continue to be the chief manure, because it must of necessity be produced on every farm so long as the farmer carries on his operations by the aid of draught animals, and so long as mankind choose to add to their vegetable food, meat, milk, butter, and cheese. Live stock is by no means disadvantageous to the farmer, for he not unfrequently by its means may gain as much from a given surface under feeding crops as from one of equal extent under corn. Green crops have also this additional advantage for the farmer, namely, that during their growth they absorb atmospheric nourishment in a far higher degree than the cereals: and thus they either directly or indirectly enrich the soil in these atmospheric supplies; and they at the same time prevent the evaporation from the land of certain important constituents. It is only since leguminous fodder-crops have been grown in regular alternation with corn and root crops, that a higher cultivation—the profitable production of large crops—has become possible. If the practice of rotation is a constraint to the farmer, he endures this constraint willingly, because such a course usually brings him a higher profit than the freest course of farming would do. How it is that this practice of rotation "closes the door against all that science can teach," I cannot conceive. According to my idea, there must be a foundation in science for the practice of rotation, as sound as, or perhaps even sounder than, any so-much-to-be-desired free system of agriculture.

The production of stable-manure is a necessity; and it is to be hoped that the time will never come when it will be needful to distil and to burn it, or to apply it to the extended preparation of various chemical compounds. The farmer does not require from the practical science of agricultural chemistry a knowledge of the ways and means of rendering stable-dung entirely superfluous by the use of purchased manures; much more does he desire to know, how he may most advantageously manage and employ his stable-manure; and, especially, how he can enhance and render certain its action. It may be taken as an almost universal rule, that only a small portion of the produce of the land is brought to market; and that chiefly in the form of grain, milk, and meat; while the other products, forming by far the greater part of the crops, are returned to the soil in manure; and this is equally the case when potatoes and beetroot are fed upon the farm, or are first employed in the manufacture of spirits, as is so much the practice in Northern and Central Germany. By the growth of grain and meat the soil is deprived of the important nutritive element phosphoric acid, and especially of chemically-combined nitrogen; whilst the alkalies and the silica of the crops, are almost entirely returned to it. Consequently the latter substances must constantly be accumulating in the soil, in a form assimilable by the plants; for no land capable of cultivation is entirely free from minerals, which, by their slow but steadily progressing degradation, yield new stores of silica and fixed alkalies in a soluble form to the soil. Hence it is, therefore, that in almost all land which has been sometime under cultivation, the soluble alkali and silica compounds will be present in greater or less excess in proportion to phosphoric acid, and especially to nitrogen; and this will be the case, even though we suppose that the nitrogen lost during the collection of the manure in the stall and in the yard, or by evaporation from the soil, or from the surface of the plants during the growth of certain crops, will be entirely compensated by that contained in the ammonia or nitric acid condensed from the atmosphere. This is the main reason why, of all the important constituents of manure, chemically combined nitrogen, and next to it compounds of phosphoric acid, are found, under all conditions of soil and climate, to be *the most certain* in their effects; and also why, by the supply of these alone, *as a rule*, the original fertility of the soil can be restored for those crops which require throughout for their perfect development, an abundance of available nitrogen and phosphoric-acid compounds supplied to their roots. This is the reason why, by the mixture of a proportionately small quantity of these compounds with the ordinary stable-manure, we can so greatly increase the fertilizing action of the latter. This is the reason why, on all kinds of soils (where the indirect beneficial action of the organic matters in stable manure are not further to be taken into account), the productiveness of a field may be maintained at its highest point for ten, twenty, or more years, merely by the addition of nitrogenous compounds and phosphoric acid. Finally, this is in part the reason why an artificial manure, which replaces the constituents withdrawn from the soil as indicated by the chemical analysis of the crop, may, in proportion to its cost, yield no beneficial result.

Manures rich in nitrogen and phosphoric acid, such as guano, bones, nitrate of soda, and ammoniacal salts, have in recent times been bought and applied by the farmer in continually increasing quantities, because they yield a profit in the increased return of the crop; and there is no present danger, as Baron Liebig imagines, that by these means the soil will suffer an injurious exhaustion, and that the farmer will thus leave to his children only an impoverished and exhausted inheritance. The fixed alkalies and soluble silica exist in almost all cultivated soils, in excess relatively to nitrogenous compounds; and if they remain in the soil, they are as a dead capital, which can profit neither father nor son. They must be rendered active, turned into money or money's worth; and this can only be attained, provided there be supplied to the soil by some means or other an increased amount of the plant-feeding nitrogenous compounds. If the farmer apply in suitable quantity to his fields only guano, bones, and nitrate of soda, he will (under otherwise favourable physical conditions of the soil) obtain excellent crops for some years in succession. In every case, however, a period will sooner or later come, when the formerly existing excess of certain nutritive constituents essential to the formation of vegetable substance, will be exhausted. The mere addition of nitrogen and phosphoric acid will then no longer suffice for the successful growth of the plant; the crops will sensibly diminish; and it will then be time to recur to the employment of ordinary farmyard manure, in order by its means again to accumulate within the soil a relative excess of the alkalies. The precise point at which the farmer should exchange one method of manuring for another, he will learn by the experience that the crops sooner or later diminish in certainty and richness: he will not wait until any particular method of cultivation which formerly gave a beneficial result has reduced to *zero* the productive capability of the land. The farmer will, however, be exempt from this experience if, as is almost universally the practice, he employs the so-called concentrated manures, not alone, but in conjunction with farm manure, either at the same time or in regular alternation with it. In this case an injurious exhaustion of the soil will never occur: rather, will the various plant-feeding constituents of the soil be brought into a truer proportion to one another, and thus by their combination a greater effect will be produced. Moreover, the assumption of Baron Liebig, "that in the north of Germany, year after year, with the aid of guano, an enormous mass of potatoes is grown, solely for the manufacture of spirits;" and further, "that, except the constituents of the guano, none of the other mineral constituents of the potatoes are returned to the land," is not in accordance with the facts we have. The so-called potato-pulp affords incidentally an excellent and highly-esteemed food-material, whose nutritive plant-constituents are not lost to agriculture.

It cannot be doubted that these are the ordinary conditions of cultivated land; they exist in a pre-eminent degree in garden soils; also very decidedly in clayey loams, and even more or less in the lightest chalk and sandy soils.

Everywhere manures rich in nitrogen and phosphoric acid are the most certain in their effects; and the commercial value of an artificial manure may be determined, exclusively according to the amount it contains of these constituents. If, in any exceptional case, it so happened that these relations were reversed—that is to say, that the nitrogen and phosphoric-acid compounds existed in excess in proportion to the quantity of the essential fixed alkalies and soluble silica—in such a case the direct supply of the latter will yield a beneficial result; whilst the addition of the former would be superfluous, or even injurious. Even in this case the farmer would soon find that a manure which supplied to his soil *all* the elements of the food of plants, would be too costly for his purpose, and therefore wasted; for he would attain the same end—the increase in the fertility of his land—far more easily, by the addition of individual constituents of manure, and this the more surely if he applied these in larger quantities than they are contained in a single crop.

Among cultivated soils, much more frequently than such as have been last supposed, are those to which no concentrated manure can be beneficially applied; since in them, the effect of farm-yard manure in lightening up the ground, has a very important influence upon the production of increased crops. In such cases no satisfactory substitute can be found for stable manure, especially if, as is usually the case, there exist in the soil and subsoil an abundance of plant-feeding substances, which can only be brought into activity under the oxydating influence of the atmosphere.

Land previously devoted to other purposes—and which, after being cleared from wood, drained, and submitted to proper mechanical preparation, is brought into cultivation as new land—is generally of a poor description, and may frequently, from its composition, be so little adapted for supplying nourishment to plants, that even stable manure has no satisfactory action. It has often been observed, in such cases, that concentrated manures which are very rich in nitrogen, and especially in phosphoric acid (bones), have a very marked effect, and are often of themselves sufficient to obtain from such lands very abundant crops. When once several good crops have thus been taken from new land, we have then the means, in these crops themselves, of maintaining the productiveness of the soil; or, by the adoption of a proper succession of crops, even of increasing it.

Utterly waste and barren tracts of sand or stony ground are generally not brought under cultivation at all. Everybody knows, however, that it may be done, if we are not afraid of the necessary cost. The most costly, and therefore the least available, method of cultivating such lands, would be that which appears to have been adopted on the "Liebig-height," near Giessen.

It may be of interest, for some objects quite apart from practice, to cultivate crops, not only for a limited number of years, but continuously, without returning to the soil, in the form of farm-yard manure, the constituents thus extracted. After, in this way, by manuring with nitrogen and phosphoric acid exclusively, through a series of years, and without any return to the soil whatever of the alkalies, the available supplies of these had been exhausted, the time would come when it would be necessary to provide not only nitrogen and phosphoric acid, but the fixed alkalies, the alkaline earths, and perhaps also soluble silica; and thus, in fact, to adopt such a mineral manure as that of Baron Liebig. If it were wished, however, to obtain uninterruptedly the richest possible crops of corn—especially of the cereals—it would be found that even in the use of such a manure some modification would be necessary as regards the quantitative relation of the several constituents; as will probably be rendered obvious from what will presently follow.

As Baron Liebig does not seem to understand how I came to be acquainted with the so-called "Pure Mineral

Theory," founded and as it appears even yet defended by him, I will now turn to this for a moment. By Liebig's Mineral Theory, every one understands the idea which was to find its practical development in the so-called *patent manure;* namely, the idea, according to which the mineral elements, exhausted by the growth of one or more crops, were to be returned to the soil in the form of sparingly soluble compounds, and in the proportions in which they were found by chemical analysis to be contained in the crops. By the aid of the patent manure, one and the same plant was to be grown in uninterrupted succession on the same land, and yet continuously abundant crops were to be obtained. This theory was pre-eminently called the *Pure* Mineral Theory, because the patent manures contained a most insufficient amount of nitrogen compounds, as was proved by numerous experiments on their application to the cereals. If that idea led to speculation with a view to the manufacture of such manures on the large scale for profit, it must be admitted to have been entirely unsuccessful. It could not succeed, inasmuch as it was entered upon in ignorance of the existing relations of agriculture generally; and further, because no previous researches had shown whether the combinations and mixtures in question would act sufficiently rapidly, or even whether they could be taken up by the particular plants for the growth of which they were to be employed. The founder of the Mineral Manure Theory did not consider that when any nutritive element is presented to the plant in any particular form, it is impracticable on the large scale to effect its action within a given time; and that a much larger quantity of the manure is required if one and the same plant is grown year after year on the same land, than when different plants are grown in alternation with one another; for in the first case a considerable quantity of important manurial constituents will very soon either be carried beyond the reach of the absorbent action of the roots of the particular plant, sink into the subsoil, or evaporate into the atmosphere. The experience of farmers, so much despised by Baron Liebig, very soon showed that these patent manures had no value for agriculture, and that they were compounded on false principles.

In agriculture, as in all practical pursuits, a theory can only be successfully applied to practice when the given conditions are fully taken into account. In the cultivation of economical plants there are developed various phenomena, which do not escape the daily practised eye of the farmer, and which it is to his advantage to observe. Some of these phenomena recur universally: many depend on certain conditions—on particular conditions of soil, of culture, of weather and climate—conditions which are fully appreciated by the intelligent farmer, even though he may not always apprehend the necessary connection between cause and effect. The knowledge of these phenomena, and of these conditions, constitutes agricultural experience, embracing a number of *facts*, by which the truth of any theory must be tested. No theory can invalidate these facts; if it stands in contradiction to them, it is false. The teachers of agricultural chemistry, in agricultural colleges, must be acquainted with these facts—the general experiences of farmers; they should make these the foundation of their theoretical explanations, and substantiate the latter by the aid of the former. When this is not the case, the teacher endeavours to adapt the actual experiences of the farmer to a theory; and even though it be a Liebig-theory, if he would measure the correctness of the former only by the scale of the latter, or would *put forth his theory without any regard to the given facts of practice*, then do his discourses cease to be intelligible and useful, and his audience of farmers, experienced in actual practice, hold him in ridicule. If Baron Liebig had any idea of what the farmer understands by "crops which enrich, spare, exhaust, or impoverish," and of all the various facts and experiences which these terms include, he would perhaps judge more correctly in agricultural affairs, and speak with more respect of a class on whose intelligence the power and the welfare of mankind so much depend.

It is a fact, that a plant which is removed from the land before or at the time of blooming, exhausts the soil but little; that is to say, its capability of producing an abundant succeeding crop remains almost unchanged; whilst a plant which remains on the land until it is ripe, exerts in this point of view a very prejudicial influence.

It is a fact, that a soil which is to produce in succession comparatively full crops of one and the same plant, must be far more richly manured than if different plants are grown in alternation with one another; and this, whether the manure be employed in the form of farmyard dung or of ammoniacal salts.

It is a fact, that the action of easily soluble, highly nitrogenous manures is not lasting; that especially *salts of ammonia, and of nitric acid, even though applied in comparatively large quantities, produce a striking result only in the first year: the subsequent effect being either very small or almost nothing.*

Baron Liebig has brought only *one* series of the experiments of Messrs. Lawes and Gilbert under his criticism; there are given, however, seven, which are contemporaneous and distinct. As a test of the correctness of the assumption of Baron Liebig, that the ammoniacal salts supplied to the soil would maintain their nourishing and soluble condition in succeeding years, we may especially refer to the results of three series of these experiments. I here place side by side the amount of produce per acre of the unmanured land, and of that manured exclusively with ammoniacal salts.

Years.	DIVISION I. UNMANURED. Produce. Grain.	Straw.	DIVISION II. MANURED. Manures.		Produce. Grain.	Straw.	DIVISION III. MANURED. Manures.		Produce. Grain.	Straw.
	lbs.	lbs.		lbs.	lbs.	lbs.		lbs.	lbs.	lbs.
1844	923	1120	Superphosphate of lime ...... Silicate of potash	560 220	1008	1112	Superphosphate of lime ...... Silicate of potash	560 220	1008	1112
1845	1441	2712	Sulphate of ammonia .... Muriate of ammonia	168 168	1980	4266	Sulphate of ammonia .... Muriate of ammonia	168 168	1980	4266
1846	1207	1513	Sulphate of ammonia	224	1850	2244	No manure		1216	1455
1847	1123	1902	Sulphate of ammonia .... Muriate of ammonia	150 150	1702	2891	Sulphate of ammonia .... Muriate of ammonia	150 150	1705	2874
1848	952	1712	Sulphate of ammonia .... Muriate of ammonia	150 150	1334	2367	Potash.................... Soda .... Bone ash.................... Sulphuric acid............... Sulphate of magnesia........ Sulphate of ammonia .... Muriate of ammonia	300 200 200 150 100 150 150	1604	2926
1849	1227	1614	Sulphate of ammonia .... Muriate of ammonia	200 200	2141	2854	Sulphate of ammonia .... Muriate of ammonia	200 200	2156	2964
1850	1000	1719	Sulphate of ammonia .... Muriate of ammonia	200 200	1721	3089	Potash.................... Soda .... Sulphate of magnesia........ Bone ash.................... Sulphuric acid..............	300 200 100 200 150	1171	1949

The experimental results here given most clearly confirm that which thousands of other trials and observations have shown, namely—

1. That fixed mineral substances, in their soluble combinations, promote the growth of cultivated plants but little, and not in a remunerative degree.

2. That ammoniacal salts produce a marked effect only during the season of their application, and that they have scarcely any influence whatever upon the crops of succeeding years, even though a very great excess of these powerful manures have been applied to the land.

In 1844, a liberal manuring of superphosphate of lime and silicate of potash did not increase the produce of straw at all, and that of corn in a most insignificant degree. In the following year (1845), on the other hand, the produce of the same land was very strikingly increased by a manuring of ammoniacal salts alone; and by a repetition of the ammoniacal manure in 1846, a similar result was obtained; whilst where the manure was in this year omitted (see 1846, Division 3), not any more produce was obtained than on the plot which was entirely unmanured in this and in the two previous years. The experimental plot (Division 3) had been supplied in abundant quantity, and in soluble form, during the two previous years, with phosphoric acid, silica, potash, lime, and ammonia, which, in an agricultural point of view, are most important plant-feeding constituents. If the excess of these manurial constituents, which was not assimilated and stored up in the increased produce of the first two years, still remained in the soil in a form accessible to the plants, then their presence must necessarily have had a favourable influence on the produce of 1846, which obviously was not the case. We cannot well suppose that the superphosphate of lime and silicate of potash would, in the course of one or two years, be entirely removed beyond the reach of the roots of the plants; for, these compounds being sparingly soluble, and not volatile, must remain in the surface soil for a considerable time. It is far more probable that the excess of the supplied ammonia-salts was either entirely transformed into easily volatile compounds, or into such as could no longer be taken up and assimilated by the growing plants. The correctness of the latter supposition would appear from the fact, that in the following year (1847) the land was restored to its relatively highest productiveness by the application of ammoniacal salts alone; the deficiency of available ammoniacal compounds in the soil was therefore exclusively the cause of the strikingly deficient crop in 1846 on the plot Division 3. The results of the experiments of 1848, in Division 3, show, that under the here existing conditions the crop was increased when, *in addition to ammoniacal compounds*, a large quantity of soluble plant-feeding mineral substances were supplied to the soil. The increase thus obtained, however, was not at all in proportion to the necessary cost; and for a similar reason such a practice can have, as well under most other conditions as here, no practical value. In 1849, a large crop was again obtained by the use of ammoniacal salts alone, whilst a fresh application of fixed mineral food in 1850 was almost entirely without effect; thus again showing that ammoniacal salts have a very rapid and transient action, the excess in no way affecting the crop in a series of years. After such results as these, it is surely quite superfluous that Baron Liebig should give himself the trouble to calculate the increase obtained in each year for every 100lbs. of ammonia-salts, and to assume that the whole of the ammonia which did not go to form the substance of the crop remained in the soil unchanged, and must be effective for an indefinite period of time; for the very assumption itself is in contradiction to all observation hitherto recorded.

It is a well-established fact, which no theory can overturn, that the *cereals*, if they remain on the land until they are ripe, remove a large quantity of soluble ammoniacal compounds from the soil; that under the ordinary conditions of agriculture in our temperate climate, the growth of these crops can be very much enhanced by the direct supply of ammoniacal compounds; and that ammoniacal salts, even if applied in great excess, have a rapid but transient action, generally lasting for one year only. It is the province of science to investigate the causes of an experience so universal in agriculture. With a knowledge of the causes which inseparably connect these facts with collateral phenomena, it may perhaps succeed in accelerating and increasing the profitable development of useful vegetable products. The cereals are not at all distinguished from other cultivated plants, either by yielding a greater crop upon a given surface, or by a specially high per-centage of nitrogen; in the latter respect, indeed, they are far surpassed by other plants which require for their full growth a far less direct supply of nitrogenous compounds. We can only account for the comparatively large amount of nitrogen lost in the culture of the cereals, by supposing that the nitrogenous compounds soon assume an insoluble form;—that they rapidly penetrate into those layers of the soil which are beyond the reach of the roots of the plants;—that in some way they are given off from the soil into the atmosphere;—or lastly, that during the growth of the plants in question, peculiar processes supervene, which cause the separation of a considerable amount of nitrogen from the plants themselves. It is not easy to understand why, by either of the first-mentioned methods, the nitrogen compounds should lose their available condition within the area of the roots of the plants in a much less degree in the case of other crops. I am much more of opinion that, during the growth of the cereals, and especially in the period between blooming and ripening, peculiar processes supervene, which stand in necessary connection with the universally-observed phenomenon, that it is exactly in this period of the growth of the plants that the soil undergoes a remarkable exhaustion of nitrogenous compounds.

The chemical composition of the cereals—of wheat, for example—during any particular period of growth, differs considerably according to variation in soil, climate, and conditions of the weather. It may be assumed as a general rule, however, that the *absolute* quantity of nitrogen contained in the ripe plant is no greater, or even scarcely so great, as chemical analysis shows at the time of blooming. The weight of the dry substance of the wheat plant increases between blooming and ripening by about one-half; that is, it is raised from two to three. At the time of blooming, the nitrogen in the wheat plant amounts to at least 1½ per cent. of its total dry substance; that in the ripe plant, on the other hand, is at most 1 per cent.—that is, taking 2 per cent. in the corn, ½ per cent. in the straw, and the relative weight of corn to straw as 1 to 2. It seems therefore at least probable, that after the blooming there was no further assimilation of nitrogen by the ripening plant; nevertheless, it is observed that it is exactly at this period that the soil becomes very considerably exhausted of nitrogenous compounds. It appears to me that there is a sufficient explanation of this remarkable phenomenon, in the relation to it of other constituents of the wheat plant, namely, the mineral substances. By the young plants, before the time of blooming, compounds of potash and phosphoric acid more especially are taken up in large quantities, and almost sufficient for the perfect development of the entire plant. It is observed, on the other hand, that from the time of blooming to that of ripening, there is a remarkable and rapid accumulation of *silica* almost exclusively. The question arises, in what form or combination does the silica enter into the wheat plant during this period of its growth? Silica is well known to be soluble in water, at the moment in which it is set free from any previously-existing combination; it, however, loses this solubility when the water is evaporated to perfect dryness. It is possible, therefore, that silica may reach the plant as such, dissolved in water in an uncombined state. I consider it, however, improbable that the larger portion is taken up in this way, because, by the drying of the soil from time to time, the accumulation of silica necessary for the perfect development of the plant would be too easily interrupted; because, by the weathering of the minerals in the soil, and by the decomposition of dung in contact with silica, alkaline compounds of it are formed which can be with greater facility taken up by the plant; and especially because, it has been recently shown, that there exist in fertile soils certain double silicates, which seem to stand in close connection with the nourishment of plants, especially of the cereals. The English agricultural chemists, Huxtable, Thompson, and especially Way, have shown that there exists in the soil a double compound of silicate of alumina and silicate of lime, which is decomposed by soda, potash, and ammonia, in such a manner that one or more of these substances, either wholly or in part, displaces the lime, and itself enters into the compound. In this compound, ammonia exerts the greatest chemical affinity—greater even than that of potash and soda. The ammonia-compound, which must always be produced when ammonia salts come into intimate contact with the constituents of the soil, is by the action of a large quantity of water decomposed; the silicate of ammonia dissolves in the liquid; the silicate of alumina, however, remains undissolved, and may, under favourable circumstances, combine anew with alkaline silicates. The solubility of silicate of ammonia in water is very considerably increased when the latter is saturated with carbonic acid; and still more when a small amount of another salt—carbonate of ammonia, or common salt, for example—is present. The silicate of ammonia is decomposed even by the simple evaporation of the water; the whole of the ammonia volatilises with the water, and the silica remains behind in an uncombined state. Now, since the available silica actually exists in the soil in combination with ammonia, and since the wheat plant requires for its full development a large amount of silica between the time of blooming and ripening, it can scarcely be doubted, that this silica is actually taken up in the form of this compound; the ammonia however, at least the greater part of it, being given off from the surface of the plant, whilst the silica remains deposited in the outer cell-walls of the stem and leaves in a solid, and frequently crystalline, form.

I entirely concur in the view of Baron Liebig, that the favourable action of the ammoniacal salts, besides their property of being taken up and appropriated by the plant, as direct *food material*, in great part depends on their capability to serve as solvents of the earthy phosphates and the silicates. On the other hand, I cannot subscribe to his opinion given as follows:—"I think it probable, that with reference to this last property, that is, their solvent power, the ammoniacal salts may be replaced; that chemistry will discover the means of rendering more soluble the silicates and earthy phosphates indispensable for wheat; and that thus the obstacle of high price, which so much limits the use of ammoniacal salts for this purpose, will be removed. The whole efforts of agricultural chemistry ought to be devoted to the removal of these obstacles."

I am of opinion, that in the culture of the wheat plant, silicate of ammonia cannot be substituted by any other compound of silica—by silicate of potash or soda, for example. If at a certain period of growth the presence of silica is necessary for the perfect development of the plant, its absorption will take place for the most part in the form of silicate of ammonia, because the presence of a considerable quantity of potash or soda at that time must exercise an unfavourable influence on the development of the plant. That ammonia, with respect to the action of which we are here speaking, cannot be replaced by other means, has been sufficiently proved by direct experiments with alkaline silicates. The necessity of the absorption of silicate of ammonia to a great extent determines the fact, that the wheat plant exhausts the land of its capability to produce a full succeeding crop, comparatively very much more between the time of blooming and ripening than if the plant were removed from the land either at the time of or before its blooming. In these relations of ammonia, must we also seek for the reason why the amount of it required to produce a good wheat crop cannot alone be determined by the amount of nitrogen contained in the ripe produce. The other cereals resemble the wheat plant, only that during their growth (especially that of oats), there come into play some special phenomena, which have a direct connection with their more or less varying character, in regard to the exhaustion of the soil—phenomena which cannot be further inquired into in this place.

I doubt not that Baron Liebig will find words to set down what I have said above as partly nonsense and partly self-evident.

It is scarcely necessary to observe, that no one would detract from the merit due to Baron Liebig for what he has established in regard to the food of plants generally. At the same time, however, it is admitted that in the region of practical agricultural chemistry, Baron Liebig is not infallible; for, in order to form a correct judgment here, it is absolutely necessary to be acquainted with the circumstances and experiences of agriculture generally, and also carefully to consider the results obtained from direct experiments in the field.

In conclusion, I will, on behalf of agriculture, address a few wishes or requests to Baron Liebig. In his latest treatise on agricultural chemistry, it is stated that an extensive series of chemico-agricultural experiments have, during the years 1845 to 1849, been conducted under his own immediate superintendence in the neighbourhood of Giessen. It is clear that the development of a young and imperfect branch of natural science can in no way so speedily and surely be furthered, as by the communication of series of experiments and investigations conducted in a manner worthy of imitation; nor can any one doubt that the experiments on the "Liebig's Height," near Giessen, have been so arranged and conducted. I cannot, therefore, here repress the wish, that the results of these experiments may at length be communicated in full detail. I presume that thereby our present views concerning the relation of cultivated plants to the more important constituents of manure will undergo essential alteration and correction.

The recent efforts in the region of agricultural chemistry appear to have aroused the indignation of Baron Liebig in a high degree—an unfortunate circumstance, since they have universally been accepted with approbation by the intelligent agriculturists. It cannot be doubted that in Germany a period favourable to agricultural inquiry has arrived; thus, several agricultural associations, and even the Governments in various States, have already granted considerable sums of money for this purpose, and are willing to grant still more. There are a sufficient number of persons who are able to conduct a chemical analysis: what is more wanting is the ruling mind to combine existing means and energies, and to lead them in the right track. Would that Baron Liebig would supply this ruling mind to the hitherto planless and aimless efforts of agricultural chemistry in modern times! Would that he would clearly and definitely—not merely in general fleeting outlines and indications, but going fundamentally into the matter—explain in what way chemistry can be made really useful to agriculture; what experiments and inquiries are calculated to bring with certainty agricultural chemistry to a greater perfection; and in what way intelligible and useful results are to be obtained from these experiments. Anyone would willingly subordinate himself to the mind of a Liebig, if, by so doing, any gain to agriculture, any significant advance might become possible. But it is something more than unbecoming, that those should be attacked in harsh terms, who, having a due regard to the existing conditions of agriculture, presume to entertain on some points a different opinion from that of Baron Liebig.

MINERAL MANURES.

We have lately been a party to the signing of a lease which, as the farm is in a mining district, contains a clause reserving to the landlord "all minerals thereunder lying and being;" and the injunction called up a number of reflections in our mind, which though somewhat discursive, may nevertheless not be without their usefulness. The tenant is to let alone "all minerals." But Liebig says no crop can be grown and sold without abstracting from the land large quantities of them. Plants are miners that not only sink shafts with their deep-searching roots, and drive levels in all directions through the soil—at least, if the mine of subsoil be well drained and ventilated—but that eat of the precious ores they find there. So that, by every crop of grain, straw, hay, or roots exported from the farm, the tenant will be robbing the land of its minerals, though not in the sense intended by the lease. Happily, these minerals may be refunded to the soil in the form of purchased corn, feeding-stuffs, and manures; and, indeed, in some lands they are so richly stored, that, with deep tillage to bring them up and prepare them for plants, a great many successive wheat crops could not wholly extract them.

What a change in the accustomed order of tillage will be seen, when strong-land farmers once practically believe that their soil is something more than a medium in which roots imbibe moisture and vegetate under the influence of warmth and darkness—when the husbandman acknowledges and acts upon the fact that drainage not only removes what is noxious to plants, but provides and prepares for them necessary food; and that mechanical cultivation not simply opens passages in which roots can burrow and water can percolate—not merely eradicates weeds which inflict garotte-robbery upon crops, but opens up stores of food existing in the soil itself, and introduces at the same time exhaustless convoys of provision from the atmosphere!

Plants require mineral food for their sustenance, not exactly in a metallic form—although chemists tell us that gold is contained in extremely minute quantities in the roots of violets, and in the stems and tendrils of the vine, and copper in tobacco and coffee—but in the form of "earths," which are merely the *rusts* of different metals. And with what a strange feeling do we look at our tough furrow-slice or powdery mould, when we first learn that it is not a single or uniform material, inert and powerless, at the mercy of winds, rains, sunshine, tilling, and manuring; but that it consists of a variety of substances, every one of them the result of great chemical operations, and still undergoing slow chemical change; that the soil, instead of being one of the original things created, is but the mingled rusts or oxides of a number of metals! Yes, that very clod, which you crush under your nailed boot, is not mere "dirt" or "ground," but—be it ever so free from vegetable matter, water, or gas—has within it soda and potash, which you know are powerful in many ways in the kitchen, and are biting caustics in the chemist's shop; sulphur, strong both in medicine and in its influence on vegetable substances; phosphorus, of wonderful and rather luminous notoriety; magnesia, an effective physic; lime, practically proved to be a mighty agent in the soil; alumina, one of the chief constituents of the useful and powerful alum; silica, which, as quartz and flint, seems as if only a mechanical make-weight in the soil, yet is found in large quantity in the fabric of all plants:—these, with other active ingredients, make up the mass of the soil; forming both the laboratory, apparatus, and chemical materials in, by, and with which the ceaseless workings of water, gases, light, heat, electricity, attraction, crystallization, and all the other agents and agencies that deal with matter, are engaged in developing the vitality of seeds, and causing "the earth to bring forth fruit of herself."

Now, "minerals" are well known to our scientific agriculturists: for soda and potash are both rust of metals, that is, oxygen gas united with sodium and potassium; magnesia is the rust or oxide of the metal magnesium; lime, the rust of the metal calcium; sulphur and phosphorus are non-metallic, but the former occurs in immense deposits in some countries; silica is the oxide of silicium; and alumina is the rust of the metal aluminium. This latter metal, more resplendent than silver, is so abundantly present in the soil in its rusted condition, that upon any strong land containing 60 per cent. of clay, fifteen tons of solid metal can be obtained from one acre of ground only one inch deep! Who would have supposed that it is the rust of this shining silver, in the form of a white powder—for such is pure clay, when separate from silica and colouring matters—that it is no other than the dust of rubies and sapphires which, in immense quantities, makes our heavy land so sticky, tenacious, and unmanageable when either very wet or very dry?

So far then from literally reserving to the landlord "all minerals" in the land, it necessarily becomes the tenant's business (in raising the greatest possible produce) to make the best use he can of all the ingredients. If the soil be poor in those substances mainly abstracted by crops, he must not be too greedy, but prudently husband the resources of his fields; replenishing with manure, to prevent their gradual exhaustion. If the land be extremely rich in mineral food for vegetation, he must take care that he gives his crops access to that food, and also makes available and wholesome the dormant stores of it existing in the ground, by means of adequate mechanical tillage. For it is true that some earths which are called "insoluble" in water, and will melt only in certain powerful acids, are yet slowly dissolved by common rain-water; and that just as the smoothly-flowing brook wears away the hardest stone, so the minute fragments of silica and other insoluble materials of our soil are being gradually and continually abraded and washed smaller and smaller by currents of rain-water charged with carbonic acid from the atmosphere. Is it not a felicitous circumstance, highly suggestive in our field practice, that the difficult ingredients which the chemist meets with in the soil, and which he can operate upon only with dilute muriatic, hydro-fluoric, or some other fearfully malignant acid, are completely subject to the ordinary influences of the weather, yielding up their virtues to the diligent toil of the husbandman, and working together to nourish crops prudently planted in a well-tilled seed-bed? How satisfactory and encouraging to find that our help lies not in costly or dangerous chemicals, but in the common elements around us!

Perhaps the following may be an apt, though somewhat ludicrous illustration: A French philosopher, a short time ago, chose to investigate the habits, customs, likes and dislikes, of a certain insect whose propensity it is to "visit us in dreams"—for our continental *savans* will examine the most outlandish subjects—and he found that if these terrible creatures come in contact with a certain liquid, they immediately leap convulsively and expire. And this liquid is neither strychnine, prussic-acid, nor other instantaneous poison, but just common soap-and-water. There was a lesson for house-wives and lodging-house keepers! And so of practical use to the farmer ought to be the knowledge that a soil abundant in "minerals" wants but the ordinary atmospheric air and water to develope and prepare them.

The landlord may keep all his iron-ore, lead, tin, copper, coal, as intended by the clause in the lease to which we have referred; but the tenant shall make all that he can out of silica and alumina, soda and potash, lime and magnesia, sulphur and phosphorus, iron and manganese — provided that he does not materially waste these substances by neglecting the necessary renewal in manuring, or impoverish the land by refraining from the deep and comminuting culture which is needed to render them available.

GUANO.

The learned Acosta, in his "Naturell and Moral Historie of the East and West Indies," relates that the Peruvians, when their country was discovered by the Spaniards, were in the habit of using as a manure the dung of a sea-bird called a *Guano*. This dung was brought from some islands on the coast, to which the birds resorted in great numbers, so that the heaps of dung were many ells in depth. The fertility imparted by it to the light sandy soil of the country was such, that the produce was doubled by it. Such was the account given of guano by a writer of the fifteenth century.

Now, it is not a little remarkable that the introduction of this valuable manure into England, which has been in general use time out of mind amongst the half-civilized tribes of South America, should have produced a complete revolution, so far as manuring is concerned, in the ideas of our agriculturists—that it should, in fact, have brought about a change which our men of science have been endeavouring to effect for fifty years with but very limited success; and that by it a complete practical illustration is afforded of the principles of agricultural chemistry, which all point to a scientific condensation of the elements of vegetable production as the most direct and efficient means of obtaining a certain result.

This discovery of a treasure far more valuable to this country than that of the gold fields of Australia, has given occasion for establishing the most extensive systems of fraud upon the agricultural body, that ever any class of men was subject to. We have no need to go into a detail of these frauds, which have been amply exposed both by the public press and in courts of justice, by the prosecutions which have been successfully instituted against the perpetrators. We can only wonder that the extent to which they have been carried, *even by houses called respectable*, has not given the farmers a perfect disgust of the very name of Guano. Nothing but a conviction of the superlative and unprecedented merit of the genuine article, and the knowledge that it was still to be obtained in an unadulterated form, of certain houses, and at a certain price, could have saved it from utter condemnation and disuse.

But, again, the introduction of guano has been followed by that of a vast number of "condensed manures," manufactured upon chemical principles, all claiming to be equal, and some of them much superior, to genuine guano, and each of them severally the very best that ever were offered to the public! What, then, is the farmer to do in this case? Is he now fully convinced that guano is the cheapest manure he can use, even at from £12 or £15 per ton, and that any manufactured article that *really* approaches near to it must be cheap indeed at £7 or £8 per ton? If so, how is he to choose amongst such a host of competitors? If there were only *one*, he would make his selection at once; but amongst so many he is absolutely bewildered. And besides, he has no means at hand of ascertaining the real quality of any of them, except by a trial, and that might involve the partial loss of a crop.

Under these circumstances, the agricultural body are greatly indebted to Mr. J. C. Nesbit, for the publication of a course of lectures, delivered at various farmers' clubs and public meetings, on the subject of agricultural chemistry,* and the nature and properties of Peruvian guano.

This work consists of seven chapters: On general agricultural chemistry, and the nature and application of manures; On the means of detecting the adulteration of artificial manures; The use and abuse of lime in agriculture; The qualities of different kinds of food, and the best methods of fattening stock; On Peruvian guano, its history, composition, fertilizing qualities, and mode of application to the soil; Determination of the value of manures; and, lastly, a letter "On nitrification," addressed to the late Mr. Pusey.

The whole of the above subjects are of deep interest to the farmer, as illustrating principles which have only recently been laid down; whilst others which have been traditionally acted upon for years are here explained, and the basis on which they are founded clearly described. Take the following, for instance:—

> "If you want to buy pure ammonia in the commercial markets, you must pay at the rate of £60 per ton for it in any manure in which it is to be found; and if you want to buy phosphates, and other materials of that kind, you must pay a very high price for them. You should, therefore, be very careful to prevent waste. One of the best methods of preventing the waste of ammonia, where you cannot put dung on the ground at once, is to make compost heaps of it—in fact, nitre beds. I have seen to-day a quantity of dung without the slightest covering over it, a large proportion of it having been exposed to rains, which must have washed away the ammonia, the nitre, and everything else that was useful. I asked the man why he did not lay it up, and put a layer of ditch-stuff upon it. He said, 'Perhaps it would have been better, sir.' This, however, had not been done. If the farmer had made a layer of road-stuff, of which there are hundreds of loads within a few yards of the field, then put one of dung, then more road stuff or soil, and so on, covering the whole with earthy matter, he would have had a complete nitre bed; he would have had the whole of the earthy matter impregnated with the gases given off by decomposition, and he would thus have secured a much more valuable manure than the washed dung which he is now putting on his land" (p. 24).

Mr. Nesbit has gone into the subject of the adulteration of guano with bold and unsparing truthfulness; he has also shown, by analyses, the comparative value of the different kinds of genuine guanos according to the proportion of valuable materials they contain. Some of them are of little worth, and, but for the rage for obtaining them amongst the farmers, would not, and we will add, *ought* not to pay for their import. We have deemed this subject of so much importance to the farmer, that we beg to refer our readers to it, and urge them to study it well. Genuine Peruvian can scarcely be purchased too dear in reason; but the immense difference in the quality of those imported, to say nothing about adulterations, is far beyond the difference in price. In fact, some of them which sell at £7 or £8 per ton are far less fertilizing than the farmer's own composts, if properly managed, and others are absolutely not worth purchasing at all as condensed manures.

We would earnestly recommend our readers to peruse the work of Mr. Nesbit, which contains valuable information on various agricultural subjects of the very first importance to them. The author's qualifications for giving advice are confessedly of the highest order, and any deductions he has laid down may be relied on with implicit confidence as the results of experiments in his own laboratory.

ADVANCEMENT OF AGRICULTURE.

The agriculture of this kingdom becomes more thoroughly understood as we advance. Progression is the order of the day; and the cultivation of the soil has already attained a degree of perfection that was, at the commencement of the present century, barely contemplated, and now obtains the utmost admiration of foreigners, who, upon their first introduction, are struck with its appearance and character. Still, we are all ready to admit that it is yet very far from perfection. A very large proportion of the kingdom continues to be badly cultivated, and the remainder not rendered so productive by far as it might be: the consequence of which renders us dependent upon other states for our bread-corn, whilst our own has sufficient scope for its production, provided its resources could be fairly developed.

It may be worth while to examine what are the causes that retard this development, and ascertain how far they are still operating; and if we can only succeed in showing how and where they commence, and to what extent they ramify, we shall then probably have little difficulty in pointing out a cure. In this country the land is for the most part cultivated by persons who rent it of the proprietors, and the majority occupy as tenants from year to year, or upon leases for terms of years, subject to covenants and stipulations as to the mode of cultivation to be pursued, or, as in the first instance, not restricted by written agreement, but held answerable at common law for any waste that may have been committed by farming the land in an imperfect or improper manner, contrary to the custom of the country.

We do not intend to enter upon the subject so far as it relates to the ownership of estates; suffice it for us at present to state that the law of entail and of mortgage acts detrimentally to the advancement of agriculture. Indeed, the relation of landlord and tenant, in its narrowest sense, becomes an obstruction to the well-ordering and carrying out a profitable system of cultivation. Nor is it to be expected that an estate represented by two or more owners can be managed so well as if only represented by one; and more especially when one of them only has any direct interest in its improvement, and is liable not only to the other two for payment in full of their claims respectively, but also for the whole expenses of management; and such other contingent expenses that may from time to time arise in connection therewith.

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* "On Agricultural Chemistry, and the Nature and Properties of Peruvian Guano." By J. C. Nesbit, F.G.S., F.C.S., &c., Principal of the Agricultural and Chemical College, Kennington, &c., &c. London: Longman and Co., Paternoster-row.

We find those estates worst managed where the ownership is divided; and it is notorious that where heavy mortgages exist, improvements rarely if ever are entered upon by the landlord. Tenants to a great extent appear to go hand-in-hand with him; thence the adage, "A poor landlord makes a poor tenant; a poor tenant makes a poor farm." Doubtless there are some exceptions, as in many instances leases are granted upon terms sufficiently long to enable an enterprising tenant to invest his capital with some degree of security; but these examples must be taken as exceptions, needy landlords for the most part being unwilling to grant leases, or to give tenants any security whatever: and the land, first impoverished, as a consequence remains in that state, and so continues to the end, or by some accident it is released. Upon the large hereditary, and consequently entailed estates of the kingdom, the interest in improving them is thereby greatly diminished. The proprietor for one life rarely looks forward to any general improvement of them, beyond his own particular life interest; and in case he has a large family, his endeavours are generally directed to providing for its junior branches, to some extent in opposition to the interests of the heir-at-law, but very rarely if ever to his own interest.

We have now so far cleared the way by showing that the landlords as a body have but little direct interest in the improvement of their estates, beyond a probability of deriving an immediate advantage; and with an interest in an estate so limited and dependent, how could it be expected to act beneficially?

The influence of a political character derived from landed property also acts injuriously for its improvement. If a tenant is a free agent (as he undoubtedly would be, to some extent, under a lease), his political support could not be relied upon, neither could he be rendered so subservient as most owners would desire. The preservation of game, also, is in itself a serious obstruction. Tenants must be held in subjection; and therefore any security of tenure is denied beyond a yearly one. Subject to an occupation uncertain beyond the current year, it could not be expected that adequate management would be bestowed? And if a lease happens to be granted, it is one continuous recapitulation of penalties of heavy amounts for acts of mismanagement, real or assumed; or if the stipulations are complied with, the tenant is compelled to farm upon principles of the last century, prohibiting him the advantage he might otherwise derive by judiciously entering upon a system in consonance with the present practice and improvements of the moment.

The field of improvement has become so enlarged by the introduction of guano, and the application of external aids hitherto unattainable, that the practice of farming partakes more of the character of a manufacture, in which the most economical cost of management by machinery is accelerated by application of capital put into operation under a skilful and judicious system of management; but if the manufacturer had been restricted to the mode of production existing 50 years ago, and had no security for his machinery, or capital invested in his improvements, it would not be very probable that he would embark in the concern with the necessary enterprise, or that, even if he did, it would be attended with any probability of a successful result.

Notwithstanding the impediments, as such undoubtedly they are, agriculture has progressed beyond the most sanguine expectation. There is a spirit so indomitable in our English farmers, that nothing will restrain them from investing their money by thousands upon the bare security of a yearly tenancy. But notwithstanding it is so, we boldly assert that until the tenure of land is placed upon a more firm and substantial footing, and proper security given to the occupier for his investment, this country must continue to expend her ten millions annually for foreign grain, which, under judicious legislation, might be produced at home.

"THE INCUMBERED ESTATES ACT."

The condition of landed property in Ireland, up to the year 1849, was perhaps unparalleled in any country under the sun. Two-thirds of the estates were irremediably embarrassed, as the law of real property in Ireland then stood. A very large portion of them was in the Court of Chancery, from which nothing but a miracle could have emancipated them; and such was the entanglement with respect to titles, that no man in his senses would think of purchasing real property. Millions of acres were mortgaged beyond the power of the proceeds to pay the interest. Many estates had lost the whole of their tenantry by famine, fever, and emigration; and the owners, although nominally possessors of land of the annual value of thousands, were reduced to absolute poverty. Even in Dublin itself, such was the impossibility of ascertaining the right owners of a large proportion of the house property, that we have known tenants seized upon by three claimants, their lawyers being totally unable to assist them.

"A desperate disease," says Rapin, "requires a desperate remedy." In the Sessions of 1849, the Government saw the instant necessity, if Ireland was to be saved from a general bankruptcy, for the adoption of a strong measure to emancipate the land from the otherwise inextricable confusion into which it had fallen. They therefore brought forward and carried the Act for the establishment of the Incumbered Estates Court.

By this Act, if any person has a claim, whether by mortgage or otherwise, upon an estate, of which he is unable to obtain the liquidation, he is at liberty to petition the Court for the sale of the estate. The claim having been argued and examined before the Commissioners (of whom there are three), and being found valid, the petition is received. The Court then advertises for all other claimants on the property to come forward by a certain day, in order that their claims may be examined, or they would be excluded the benefits of the sale. No obstacle being raised, the sale proceeds on the appointed day in open Court; and the purchasers having completed their part of the contract by paying the purchase-money, were at once put into possession, at a small expense, of "Parliamentary titles," valid against all prior claims of whatever kind.

Under this excellent Act, property has been sold to the amount of upwards of twenty millions sterling, and a vast number of petitions still remain to be taken cognizance of by the Court. Indeed, the accumulation of business is so great, that the present machinery of the Court is declared to be totally inadequate to its clearance. At the same time the amount of benefit conferred on the country by its operations is so great, that Ireland is fast rising from a state of hopeless poverty and degradation into which she had previously sunk, and bids fair to be once more a flourishing and productive country. It is therefore with surprise and deep regret, that we find this invaluable institution—the greatest boon, *without any exception*, ever bestowed by the British Legislature upon Ireland—is to be abolished, and its powers transferred to the Court of Chancery, the present Commissioners retiring upon their full salaries.

The only reason, we believe, given for this retrograde measure, which has been already agitated in Parliament, is the inadequacy of the machinery of the Court to get through with the constantly accumulating business pressing into it. This is perhaps as preposterous and false a reason as could be alleged for as palpable a job as ever was perpetrated by a Government. If the present staff is insufficient, why not double, or even, if necessary, treble it? We should be able to understand *that*; but to transfer the business to the Court of Chancery, so notorious for its prolixity of proceedings, and from whose vortex the Incumbered Estates Court has emancipated so much property from hopeless litigation, is too barefaced an outrage upon common sense and common honesty to be concealed by such a pretext.

We have all along feared that the Incumbered Estates Court was too valuable an institution to be long tolerated by the gentlemen of the "long robe." *It gives cheap, good, and expeditious redress,* all of which are an abomination to lawyers; and consequently the conspiracy against it. All we can say is, that we do trust some independent member of the House will yet rise, and expose the injustice and folly of the measure on the part of Government, in thus truckling to the legal profession, for whose benefit alone it is brought forward, to the irreparable injury of the public.

The following passage from a French work will, perhaps, explain by analogy the true reason for this change:—

> "The Duke de Grammont asked the Chancellor d'Aguesseau, on some occasion, whether, with his experience of the chicanery in legal processes and of their length, he had never thought of some regulation which would put an end to them? 'I had gone so far,' replied the Chancellor, 'as to commit a plan of such a regulation to writing; but after I made some progress, I reflected on the great number of avocats, attorneys and officers of justice (!!) whom it would ruin; and compassion for them made the pen fall from my hand. The length and number of law-suits confer on the gentlemen of the long-robe their wealth and authority: we must therefore continue to permit their infant growth and everlasting endurance.'"

The Incumbered Estates Court gives speedy relief: the Court of Chancery nourishes the "infant growth," and insures the "everlasting indurance" of law-suits. "Compassion" therefore for the lawyers ruined by the former has probably more to do with its abolition than the public welfare. But where is the compassion for the suitors?

CULTIVATION OF POTATOES.

The potato plant requires for its profitable growth a deep soil of warm and moist earth—the three qualities of depth, warmth, and moisture are essential to the successful cultivation of the potato plant. The subsoil must be dry and porous, but not open to a total want of moisture. The soil not adhesive to clamminess, nor loose to an unconnected pulverulence, it must possess stiffness rather than openness, and be moist rather than dry. A moist climate is also required, and attended with much warmth. A dry warm climate does not suit the plant, nor a wet climate that passes into coldness. A depth of warm moist soil or earth, with a climate of rain and heat, are the proper circumstances of potato cultivation.

Potato lands should be winter-furrowed from the autumn stubble by the strength of three or four horses—being composed of deep heavy earths, and a depth of loose soil being required for the growth of the plant; a due strength is required to move the land deeply, and it may be given in opinion that all or most green-crop lands should be winter-furrowed with the strength of three horses. A deep furrow gives freedom to all future operations, and affords a loose soil to the growth of plants. So soon in March as the dry weather permits, the potato-lands are ploughed across the winter furrow with narrow furrows, and deep as the winter ploughing—narrow, in order to cut the soil into thin slices, and along with depth to promote the earthy reduction of the ground. A dry operation is essential: the harrows follow. The cast-iron roll of a ton in weight succeeds; the harrows are again applied; and then all weeds and stones are picked by hand, and removed from the ground. The next ploughing is performed in ten or fourteen days after, across the last ploughing, and the same operations are repeated. This second earth in the spring will most generally prepare the land to be planted with potatoes; but if not sufficiently pulverized and cleaned from weeds, another course of the same operations must be repeated, so that every readiness appears by the fourth week of April, which is the most approved season of potato planting in the United Kingdom.

The general line of drills is in the longitudinal direction of the field: occasionally a variation will be required, to aid the escape of water, or to give access from the gateways along the drills of land. The first furrow is drawn along the intended line by the common plough moved in the direction of poles placed to show the line. This furrow is of the medium depth, as can be done by the attention being employed in moving along the marked line of direction. The plough returns in the same furrow, and throws the earth deeply and widely to the opposite side—the horses walking one on each side of the furrow, with a main whipple-tree of five feet in length, which permits the wide operations that are required. A straight deep trench has now been made, with a ridglet of loose soil on each side, which show the beginning of forming the drills. There are required a skilful ploughman, a pair of powerful active horses (high in mettle and condition), swing plough with a mouldboard of posterior width and height, to push and raise the drill. All the swing ploughs of South Britain are deficient for this purpose, being too low and too narrow in the heel or posterior parts. Small's improved mouldboard of South of Scotland yet bears away the palm for this application of the swing plough; and all ploughs with wheels on the end of the beam are useless for drilling, however good for ploughing some few exceptional cases of lands on concreted subsoils and dry gravelly clays. In these few cases, any superiority appears: a varied general value yet rests with the swing plough.

Drills are opened with one furrow of the common plough at thirty inches apart for potatoes, by the left-hand horse walking in the first trench made in the proposed line, the plough moving along the right-hand ridglet at the settled width, and the right hand horse walking widely apart as directed by the distance of drills from each other. The plough works deeply as the horses are able to draw it along, makes a hollow at the distance of 30 inches from the trench first made, and throws a heavy furrow of loose soil to the right-hand side, forming a new ridglet at the same distance from the other as the hollows are apart. The plough returns along the other side of the first-made trench, and makes in the same way a hollow and a ridglet. A continuation of these movements forms a succession of drills, and when the space of ridges becomes wide, a fresh commencement is made at a measured distance from the first, which proceeds as above described till the field is finished in drills.

This mode forms drills with one furrow of the common plough, which answers the purpose very well on finely-pulverized land, and also very quickly performs the operation. The forming of the ridglets has been done by the plough going and returning in the same furrow, which moves the land more than with one furrow, and also gives an opportunity of correcting any deficiency in the straightness done with a single movement of the plough. But the mode is now abandoned, one furrow being sufficient on all light lands; and on heavy earths, the covering of the dung or reversing the drills with two furrows is found to answer the purpose. The quickness is also a matter of moment; and one furrow equals the dispatch of the double-mouldboard plough, which is now disused for drilling, as the narrow-pointed share of the common plough penetrates the bottom of the land, and raises fresh soil from its point; whereas the two-winged share of the other floats on any hard surface, and, with the soles of the two mouldboards, raises the implement from the ground, and performs a shallow operation. These differences have employed the one and rejected the other for drilling, in the best root-growing counties.

The farmyard dung has been placed during winter in the corner of the field, at the gateway, in a heap that has been trampled by the carts passing over it, and fermentation thus prevented. Ten or fourteen days before the season of planting the potatoes, the heap of dung is turned over by forks, and loosely laid together, the lumps broken into pieces, the dry outside substances placed inside, and a careful mixture made of any different matters that may appear. An active fermentation will happen; and when lifted for use, the condition of the dung must be thoroughly moist in every part, and warm, without any whiteness of straw. A large moisture is essential. Single-horse carts convey the dung to the drills, and deposit it in heaps in the intervals, at the rate of not less than twenty loads to an acre, when it is evenly spread along the hollows, with attention that none lies on the tops or sides of the drills. The potato-sets, cut on the day of use, fresh, and of medium size, with one eye or bud, are placed over the dung, from baskets, by persons who walk along the drills at the distance of nine inches apart, and press the sets into position by a tread of the foot. The common plough splits the drills, and reverses the soil over the dung, and makes a ridglet over the hollows of the first formation. A main whippletree of five feet in length stretches across two drills, at which distance apart the horses walk, one on the right hand, in the furrow, and the left-hand horse on the top of the drill, next the one that is split by the plough. A deep and heavy furrow of soil is thrown over the dung, by reversing over it more than half of the drill; and by the horse walking on the top of the ridglet, the dung and sets of the plants are not disturbed by the feet of the animal treading in the hollows. Another furrow is thrown over the dung, from the other side, by the plough returning in the hollow, and with each horse in another hollow, being five feet apart. This operation gives opportunity of raising much fresh earth over the dung and sets, which are now deeply covered; and the ridglet is rolled by the light roll of the farm—in weight about five or six cwt. The tops of the drills are best rolled, to allow a level braird of the sets, and prevent the narrow ridge of soil raised by the plough from exposing the naked stems, by the earth falling down from the thin point of height. Injury is done by such exposure.

When the young plants have all risen into a growth of some inches in height, and weeds have also appeared, the intervals of the drills are deeply ploughed by the miniature plough, drawn by one horse, which passes twice along each interval, and lays a furrow into the centre taken from the side of each drill. The turnip drill scufflers are too light for this purpose, though the implement may be useful to scuffle the said intervals after the ploughing has been done. After the many implements that have been devised for working the intervals of drilled lands, the miniature plough is yet the best for green crop lands of any kind, and more especially for potato grounds, which are generally of the heaviest sort. The time required in passing twice along each interval is compensated by the superior execution of the work, and that on soils of every description. Two ploughs, joined by cross and slant bars, with one handle to each implement, and drawn by two horses, take a furrow from each side of the intervening drill, and perform a most effectual work. This is an old contrivance, and yet the most useful.

The hand-hoe follows the ploughing of potato drills, cuts all weeds, and by passing between each stem, breaks and crumbles the soil, but not exposing to drought the stems below the mark of soil in which they have grown. The earth is to be wholly moved, but not pulled away below that depth. Two ploughings and scufflings may be required on most lands, and a second hand-hoeing, which cuts the weeds of second growth, and places the earth in the proper position around the stems. After all these operations have been performed in an effectual manner, and no weeds appear, the double mouldboard plough, drawn by two horses walking two drills apart moves along an interval, and lays a heavy furrow of loose pulverized earth to the roots of the potato stems, going as deeply as the subsoil and the power of the horses will permit. In about two weeks after, the same operation is performed, and any tall weeds that may afterwards arise are pulled by hand.

When potato-drills show a hardened appearance after rolling, much benefit is derived from harrowing the tops, with light harrows, just before the young stems are seen; the hardened top is broken, a fresh tilth is produced, and the young stems are protruded into light. The performance is very beneficial. After the drills are earthed-up by the double mould-board plough, the crop of potatoes grows to maturity, and all tall weeds are pulled by hand as they rise into view. The decay of the haulms gives sign of harvest, which happens in October throughout the United Kingdom. The haulms are pulled by hand, and removed from the field; the potatoes that adhere to the stems are gathered by hand, and are shaken from the roots; and the common plough, or double mouldboard plough raises the drill of ground, and exposes the tubers to be gathered. A harrow follows, and assists the raising of the roots into view. The tubers are secured in roofed pits, and the haulm is laid in a store-yard of pigs, to be chewed and moved about by these excellent manufacturers of manure, as the substance is very indestructible by the common means of reduction. The haulm of potatoes may be very advantageously cut into short lengths for the purpose of manure.

The level sole of the plough has a sledging effect beneath its action, and closes the pores of the ground by its passage over the subsoil. Much of the superiority of digging over the ploughing of land arises from the undersoil being penetrated, and left open by the implements of digging; the points leave open holes for the passage of air and water, and the moved ground is laid loosely over the interstitial surface. It is therefore recommended that crops of potatoes are raised with the three-pronged forks of the farm, and of which the narrow points pierce the under-ground, and leave the holes open to air and water. The soil being raised in the small loads of the fork, is thrown off in order to expose the tubers of the potatoes, and is minutely broken by the action of raising and exposing the potatoes. A man with a fork digs one drill, and throws out the potatoes, which are gathered by hand into baskets, that are emptied into carts: care is used that the hollows of the drills are dug as well as the ridglets, which performs a complete digging, or, what is better, a forking of the land, giving an opportunity at the same time of removing all stones and weeds; and the land is laid level, to be ploughed and sown with wheat, or remain over winter for barley. Most generally wheat succeeds a potato crop. All lands will be benefited by this digging with pointed instruments, but especially the heavy soils on which potatoes are grown.

Potatoes will produce on fair soils and good management an average of 15 tons per acre, which give 4,800 lbs. of nutritive matter: each pound yielding 1,100 grains. The red potato has given in 64 drachms about 250 grains of nutritive matter, which consisted of starch 204, and 46 of saccharine, mucilaginous, and albuminous matters. Potatoes are superior to Swedish turnips in nutritive matter, in the ratio of 200 to 64; to beetroot in the ratio of 200 to 150; and to cabbages in the ratio of 200 to 73. 100 lbs. of potatoes yield 25 lbs. of nutritive matter. A recent analysis of potatoes gives the composition as under:—

Water.	74.2
Pulp	6.8
Starch	13.3
Albumen	0.9
Sugar	3.3
Fat	0.1
Acid and salts	1.4
	100.0

The quantity of water that is contained in the turnip and potato plants (89 and 74 per cent.) affords a most notable instance of the little reliance that can be placed on the results of chemical analysis as an indication of the nutritive properties of any vegetable substance. No chymistry would recommend, *a priori*, any plant for profitable use that contained so large a per-centage of water; neither is the difference in the quantity of water in the potato and turnip sufficient to account for the difference that exists between the two plants in point of nutritive value. For most purposes the potato is improved by boiling; while the turnip is equally unfitted by that process for general use. The little trouble that attends the cultivation of the potato and turnip, as compared with cabbages, beetroot, carrots, and parsnips, very much enhance the practical value; while the greater readiness in storing, and in the application as food to animals, tends further to increase the general estimation. If the first place in point of general utility be given to the turnip, in the various cases of soil and climate, and the most extensive use of the root, the second must be yielded to the potato without hesitation. The prejudices that exist against the potato, as a scourge of the land, arise wholly from want of consideration and from hasty conclusions. The growing of potatoes has been interdicted beyond the domestic use; but it is hard to conceive how a root crop of any kind, manured and properly cleaned, can impoverish land, or in any way prove disadvantageous. On the other hand, the soil is much benefited by potatoes: the tubers divide and heave the earth, and the colour of the land is always black and moist from the fæcal exudation, whatever be the colour before being planted with potatoes. The shade of leaves cover and protect the ground, retain moisture, and promote decomposition on the surface. The cultivation of potatoes forms an excellent preparative for wheat; and grass seeds always thrive better in potato ground than on any green-crop culture. The crop of potatoes is sold from the ground: if consumed by animals the manure will equal any quantity produced by grain or green crops.

The list of cultivated plants does not contain any one that is nearly so generally useful as the potato; from the tables of princes and peers, down to the dinner of the humblest labourer, the potato holds a place; and for the use of animals no one plant can be compared with it. For human food the use of the root is well known; for horses it is equally useful, in a raw or in a steamed condition; for young cattle the raw state is preferable: for swine the best experiments have shown that the steamed condition is preferable for the feeding of bacon, though the raw state is equally beneficial for store pigs. When steamed and mashed, with meals in mixture, the roots are very excellent food for poultry, and placed in troughs for use. And the last, and not least use, in the estimation of some persons, is the half-rotted condition in the fields where grown, and laid above the earth for the use of pheasants, to be eaten at pleasure. This last observation alludes only to the use of the root, and not recommending the application in that way.

Potatoes may be planted in the usual way in the months of October and November, and will withstand the danger from frost, and yield a large produce. The crop will be a month earlier than the spring sets, which is of some consequence in precarious climates for the sowing of wheat. These facts are now most fully confirmed by experience.

J. D.

BATH AND WEST OF ENGLAND AGRICUTURAL SOCIETY.

The annual meeting of the Bath and West of England Agricultural Society, which was held at Yeovil on Wednesday, June 4, has been accompanied with many circumstances of a very encouraging character. Last year the country was at war, and it was considered that all kinds of agricultural produce were selling at war prices; but the war having suddenly ceased, many apprehended that a sudden revulsion, like that at the peace of 1815, would take place, and that the corn and cattle trades would again collapse, leaving the agriculturists in a condition similar to what was then experienced. It has, however, been discovered that the circumstances of the country are different from what they then were, and that agriculture is no longer dependent for success upon the extraneous aid and exciting stimulus of war, but upon the more solid and satisfactory basis of the relative proportions of demand and supply—the only legitimate balances in which commerce can be weighed.

The fact is, consumption has overtaken production, not only in most of the larger dominions of continental Europe, but also in the United States and British America. This follows in consequence of the continually increasing populations, which keep pace with whatever increase of production may be effected. In Europe, also, there are many other causes operating, independent of the increase of population, which since 1815 has amounted to nearly one hundred millions. A large breadth of land has been appropriated to the sugar-beet and other products, which has lessened the growth of cereal food; and if we add to these causes the deficient harvests in different parts during the last three years, by which the stocks of wheat have everywhere been reduced to a minimum, we see sufficient reasons for the steadiness with which prices have been maintained under the influence of peace. Nor can we expect that much reduction will take place until the stocks in the wheat-growing countries of the world are in a more safe and satisfactory condition.

It was under these favourable auspices that the meeting took place at Yeovil, in Somersetshire; and when to these were added the splendid brilliancy of the weather, the picturesque situation of the town itself, the lovely scenery by which it is entirely surrounded, the excellence of the arrangements made for the reception of the company, as well as for the live stock and implements, to which we will add, the hearty reception given by the town and corporation of Yeovil—we may justly reckon the present one of the most successful agricultural meetings that has ever taken place.

The company on Thursday, which was the principal day, was numerous, consisting of the élite of the neighbouring districts, with many persons from distant parts. Upwards of 10,000 persons visited the ground. Nothing could exceed the adaptation of the arrangements, everything being under cover that required it, and abundance of room allowed for the most exact scrutiny of the various portions of the exhibition. We observed, too, that most, if not all the exhibitors of implements were well satisfied with the results, as far as the amount of business they were able to transact, which shows that it was not curiosity alone that brought the numerous assemblage together; and consequently, that the Society must be deemed a practical one, and its meetings "*commercial marts,*" and not merely media for the distribution of prizes. Such, we believe, is the character they are in future destined to assume.

The business of the meeting commenced on Monday, on which and the succeeding day trials of some of the field implements and machinery took place: the former, on Monday, on ground belonging to Mrs. Brown, of Ashington, for such as are adapted for heavy land work, and on Tuesday in a field on the farm of Mr. Roberts, near the Union Workhouse, for those fitted for light land. During these trials, most of the implements and machines performed their work satisfactorily.

It ought to be mentioned here that an amicable arrangement was entered into between most of the principal implement makers and this Society, to the effect that implements might be exhibited for inspection and sale, but not of necessity for trial. The reasons assigned for this arrangement are, first, that in many cases the machinery and implements generally of the larger makers are so frequently alike in excellence that superiority in working is rather the effect of accident than of a real superiority in the construction of the machine or implement itself; and, secondly, that the inconvenience of competing at the various meetings, which succeed each other so rapidly, begins to be seriously felt.

In consequence of this movement there was *no competition in implements and machinery* amongst the generality of large makers, by which the prizes were distributed amongst the local and other small makers, who otherwise might not have stood so good a chance. It must not, however, be supposed that this arrangement of the larger makers had any prejudicial effect upon the meeting at Yeovil, by lessening the number or variety of the implements exhibited. On the contrary, it was universally considered to be the most numerous and varied show that has been seen, whilst their adaptation to the work for which they were constructed approaches generally as near perfection as possible. Neither was there the slightest degree of jealous feeling manifested by any of them.

In the department of live stock, without the pens being crowded, there was a fair representation of all the different breeds and classes, with one exception, that of horses, of which we shall have occasion to say more presently. Amongst the horned-cattle, the Devons were, as usual at this exhibition, the most numerously, and, we may add, the best represented. In fact, in this breed of stock, the Judges must have been considerably puzzled which to select for their awards, so nearly balanced were they in beauty, gracefulness, and delicacy of symmetry and compactness of form. We were still more astonished at the precocity to which some of them had attained, and which, but for their horns not being so fully developed, and (in the bulls) the want of fulness of their neck, would have led many astray as to their age. The heifer *Princess*, belonging to Mr. T. Miller, Sherborne, only 11 months old, would have passed readily a few years ago for nearly double that age. This heifer and her colleague, *Martha*, obtained the second prize of Class 6. We think she was entitled to the first; but we are not infallible.

We also noticed a Devon bull in Class 3, No. 20, belonging to Mr. W. M. Gibbs, of Bishops Lydiard, aged 1 year and 9 months, which struck us as superior to the one which gained the second prize, whatever may be said of the first; but its merits did not so strike the Judges. Upon the whole, the show of Devon bulls was a magnificent one, only eight out of twenty-six specimens being above three years old.

Of Devon cows in calf or in milk (Class 4) there were only ten specimens exhibited, some of which possessed great beauty of symmetry, whilst a few appeared to us to have but small merits to recommend them.

Of the Devon heifers (Classes 5 and 6) we can speak more favourably; for amongst them there was a large number which, if appearances do not deceive, are destined to become real *aristocrats* in their way. But for want of space we cannot go further into particulars. There were eight specimens of Class 5, single heifers in calf or in milk, and eight of couples, Class 6, under two years old.

Of Class 7 there were only two specimens, a pair of steers, for which a silver medal was awarded, but their merit was not such as to entitle them to any especial commendation.

"The Short-horns, Herefords, and Cattle of other Breeds," were less numerously, and we think less worthily, represented than the Devons; but some of them, particularly the short-horn bulls, were noble animals. It was a disadvantage, we think, classing the mixed breeds together, as it in a manner destroyed that identity of race which in such cases is necessary to give distinctness to merit. The cows and heifers of these breeds attracted the most attention, and deservedly so. Mr. Richard Stratton, of Broad Hinton, obtained the first prize in Class 14 (No. 71), the first and second ditto in Class 12 (Nos. 76 and 75), and the second in Class 13 (No. 82).

Mr. H. Palmer's red and white Hereford bull, "Rufus" (Class 8, No. 55), is a noble animal; but we thought the white shorthorn, "Snowdrop," was quite equal to him in merit. In Class 9, also, we could not see why Mr. Jeffrey's shorthorn bull, "Admiral Lyons," did not take the precedence of Mr. Hewer's white shorthorn, "Borrowby Lad;" for we certainly considered him a more compact animal. Several of those which did not obtain prizes possessed very considerable merit; and, should we have the good fortune to attend the next meeting, we hope to see both a more numerous representation of the shorthorns and Herefords, and also to find them separated in the classification, which will render inspection more satisfactory, and adjudication more easy and decided.

There was an excellent show of sheep, amongst which the Leicester and the Cotswold appeared, as last year, to be the favourites. This, however, is wholly a matter of taste; for, much as we admire both those breeds—and their representatives at Yeovil did not lessen it—there are qualities in the Southdown which give them a peculiar claim to the high favour of the flock-master. Amongst these are what may be called their unpretending and unobtrusive habits, their social and quiet demeanour, and, above all, the small extent of pasture they appropriate, by which more can be kept upon a given breadth of land than of most other breeds.

Great attention has been paid, here, to the pure Leicester breed, in reference to the Society's shows, and beautiful specimens were exhibited on this occasion. Mr. J. Partridge's ram (Class 15, No. 104) is a splendid specimen in point of symmetry and smallness of bone. Mr. J. Bodley also has proved a successful breeder, and received two second prizes for long-woolled rams in Classes 15 and 16, Nos. 111 and 138, Mr. J. W. Buller taking the first prize in the latter class.

The two pens of five Leicester or long-woolled ewes, class 17, contained beautiful specimens, as did also those of class 18. In class 19, Mr. J. K. Tombs carried the first and second prizes for his yearling Cotswold rams. Indeed he had no competitor: the only other in this and in classes 20, 21, and 22, being disqualified by unfair shearing. In consequence of this, Mr. Tombs received all the prizes awarded to four classes; and we may add that this fine breed of sheep was well represented by that eminent breeder, in which department, indeed, his only actual competitor was the well-known Mr. W. Gillett, of Brize Norton.

The exhibition of Southdowns was very good. Mr. J. Moore, of Pewsey, Wilts, and Mr. Jas. Harding, of Higher Waterson, Dorchester, carried off the prizes in classes 25 and 26; and the former also was successful in classes 27, 29, and 30, the two latter being Hampshire Downs. Some of the specimens of this breed were very fine in respect of symmetry and smallness of bone. The Down ewes were scantily represented; but what were there did justice to the breed.

The competition, however, most numerously represented in the female line were the Somerset and Dorset horned sheep, amongst which were some very beautiful specimens. Mr. Templeman obtained the first prizes for the pens of five Dorset ewes of classes 35 and 36, whilst of the 12 rams in classes 33 and 34 the four prizes were equally divided between the two breeds. Of the mountain sheep there were two classes, 37 and 38, in which Sir Thomas D. Acland received three out of the four prizes, there being only two other competitors.

We confess we were disappointed in the show of horses, not so much at the paucity of number as at the inferiority of what were exhibited. Decidedly the most meritorious, in our estimation, were those of the Suffolk breed, three of which were shown by G. D. Badham, Esq., of Ipswich, and the fourth by Mr. John Penny, of Yeovil. This latter obtained the first prize in class 40, whilst Mr. Badham gained a first prize in classes 41 and 42. In respect to the horses generally, we do not say there were no good animals, in the ordinary acceptation of the term, but there were much fewer possessing that super-excellence which we naturally look for in an exhibition of this public nature. It appears to us that horse-breeding is comparatively but little attended to in Somersetshire and some of the counties adjoining—although Mr. R. H. Watson, of Dorsley, Totnes, Devon, is, for the credit of his county, honourably engaged in improving the breed of horses in the west, by the introduction of Phenomenon, and other celebrated stallions; still he is almost an exception to a general rule. And yet there is no animal whose qualities are more easily brought out by crossing and careful attention to the selection of the sire and the dam, whilst the rearing of a *good* horse is not *necessarily* more expensive than that of an ordinary one. We hope, however, that our Somersetshire friends and their neighbours will attend to this question, and not trust alone to the counties Yorkshire and Lincolnshire to supply them with a well-bred animal, whether for the purposes of the farm, the chase, or the road.

The implement department more than sustained its character in comparison with former years. Indeed, steady progression has marked the development of this feature of the show from the very commencement of a new era in the society's management some six years back. At Yeovil, we were glad to see, the number of implement exhibitors fairly doubled those that might have been counted at Taunton in 1852. The precise allusions which follow, and which preponderate in favour of the first makers, must not be considered as betraying a wish to ignore the importance of local and less celebrated manufacturers. The presence of these at the various meetings forms no mean element in the good yet to be effected by the operations of the Bath and West of England Agricultural Society. Amongst the local makers, we observed the names of Beadon, of Otterhead; Brinsmead, of Torrington; Brown and May, of Devizes; Burnard, Lack, and Co., of Plymouth; Burrow and Page, of Morchard Bishop; Carson, of Warminster; Cheek, of Halse; Cockey, of Frome; Collins, of Trent; Comins, of South Molton; Drew, of Morchard Bishop; Dunn, of Wellington; Eddy, of Kenford; Eyears, of Stofford; Feaver, of West Camel; Fisher, of Taunton; Fowler and Fry, of Bristol; Hannam and Gillett, of Yeovil; Hennett, of Bridgewater; Hill, of Yeovil; Hutchings, of Dorchester; Huxhams and Brown, of Exeter; Impey, of Street; Isaac, of Bath; Kerslake, of Exeter; Lovell and Wright, of Glastonbury; Maggs, of Bourton; Milford, of Cullompton; Parsons, of Martock; Pearce, of Exeter; Pitts, of Kenn; Richards, of Wincanton; Roberts, of Maiden Newton; Rowe, of Sherborne; Rowsell, of Chard; Twose, of Tiverton; Warren, of Maiden Newton; Westcott, of Cullompton; Webber, of Newton Abbott; Wightman and Dening, of Chard; Wright, of Sandford; Dobbs, of Tiverton; Meetens, of Taunton.

Messrs. Barrett, Exall and Co., of Reading, amongst other articles, exhibited a two-horse portable patent machine, with patent safety gear-work, which is a vast improvement for the prevention of accidents amongst a class of persons but little accustomed to the dangerous use of these machines. The same observation will apply to the safety chaff-cutter by steam power, which is adapted to cutting a ton and a-half of hay per hour. Their steam or horse power gorse bruising machine is an article that is likely to come into more general use, as the value of gorse as a winter and spring fodder for cattle and horses becomes better appreciated.

We noticed Bentall's patent L.I.B.B. broadshare and scarifier, invented and improved by Mr. Edward H. Bentall, Maldon, Essex. With four horses it will effectually tear up the roughest soil; and with two small tines working behind the broadshare, will, with two horses, scarify a considerable breadth of soil in the course of a day's work.

The reaping machine of Mr. John Leakey Bowhay, Wellington Works, Modberry, Devon, has for its peculiarity two-bladed cutters, working in a similar manner to a pair of shears or scissors; the improvement appears to us to supply a desideratum in this machine, which brings it one step nearer to perfection.

At Mr. William Busby's stand were two one or two-horse carts, which appeared to us to possess considerable merit, on account of the combination of strength of structure with lightness of draught. We have some idea that these one-horse carts are destined to supersede the old waggon, being decidedly more handy, as well as more economical. They are universally used in Ireland; and one driver is able to manage four or five carts when the horses get accustomed to his superintendence. Mr. Busby had also a two-wheeled deep plough, and a general-purpose two-wheeled plough. This latter has attracted a good deal of notice as an improved implement, having gained many head prizes, as well as first-class medals at the Great Exhibition of 1851 and the Paris Exposition of last year.

A very efficient patent roller or clod-crusher was here exhibited by the inventor, Mr. Cambridge, of Bristol.

Mr. Hugh Carson, of Warminster, showed a

Moody's patent hand turnip-cutter on iron frame, the peculiarity of which strongly recommends it to the attention of those who do not consider the dirt on the outside of the roots beneficial to cattle, which was gravely asserted to us, by another maker. This machine, by some occult contrivance unknown to ourselves, pares off or rubs off all the dirt from the skin, and the portion that is destined for the cattle or sheep falls perfectly clean. There are three of these machines, of different gauges of cutters, for preparing the roots for either cattle, sheep, or lambs, as the case may be.

Messrs. Chard and Munro, of Bristol, displayed a light Cobourg, or family conveyance, of a very neat and useful construction. He also exhibited an improved portable cider press, to be worked by two men.

Messrs. Clayton, Shuttleworth, and Co., of Lincoln, whose merits as engineers and machinists are universally acknowledged, supplied the meeting with two portable patent steam-engines, respectively of six and seven horse-power; and also with two of their combined portable thrashing, straw-shaking, riddling, winnowing, chaff-separating, and barley awning machines.

Mr. Richard Coleman, of Chelmsford, had five patent drag harrows, cultivators or scarifiers, all of the same construction, but differing in dimensions. These implements deserve special notice.

Mr. James Cornes, of Nantwich, exhibited a series of useful registered chaff-cutters, one with three knives, and the five others with only two; but all on the same construction. These are very efficient machines.

The improved cider press, exhibited by Messrs. Dray and Co., is calculated to express six hogsheads of juice per day, with the power of two men, thoroughly exhausting the pulp. They also exhibited a pair of tubular iron gates fitted with a self-adjusting stop, which rises as the gates fall to, and sinks again to a level with the ground as they open, which prevents the horse from stumbling against it in passing through. Their patent reaping machine, possessed of great merit, owing to some accidental mismanagement on the part of the men, did not succeed at the trial so well as on former occasions.

Messrs. Fowler and Fry, of Bristol, had a clod-crusher of a peculiarly useful construction. The axle is straight, but is furnished with a series of cams or eccentrics, which place each section of the whole in a backward or forward position, as the case may require. In consequence of the eccentrics the edges of the several sections continually cross each other, by which action they are cleansed from the soil which otherwise would adhere to them. Their iron horse-hoe for green crops, adapted to work on the hill-side, is a useful implement in a hilly district, as well as on level land, to either of which it can be arranged.

Messrs. Garrett and Sons, of Leiston Works, Saxmundham, exhibited a variety of very useful machines, consisting of their celebrated corn drills, seed and manure drills, horse hoes, thrashing machines, &c., &c. The quality of their machines and other works is too well known to require to be individually described. We refer, therefore, to the catalogues of the exhibition for a description of their various properties and peculiarities.

Messrs. B. Greening and Co., Church Gates, Manchester, have been particularly successful in the manufacture of iron wire fencing, netting, hurdling, &c., many specimens of which were exhibited for both field and ornamental garden work. A combined churn and washing machine is a novelty which we have never seen before. It ought to be stated that the wash-tub and the churn are separate articles, but are worked by the same machinery.

Messrs. Holmes and Son, of Norwich, displayed a considerable number of corn, seed, and manure drills, the construction of which is different from that of any other machines of the kind. They have also a novelty in a fertilizing wheat rake, or weed destroyer. Without disturbing in any great degree the roots of the wheat, this instrument loosens the ground, and brings the weeds, root upward, to the surface, to have the benefit of the sun. Their double-breasted plough is useful for ridging the land.

Messrs. R. Hornsby and Son, of Grantham, Lincolnshire, exhibited a few of their first-rate machines. The character of their machines and implements is now *un fait etabli*, and they will pass for "standard coin" in every part of Europe and the United States, as well as at home.

The instruments of aration manufactured by Messrs. Howard and Co., Bedford, have also formed their own character, and are in great request. They came out strong at Yeovil in ploughs, harrows, and horse rakes; and some of these were greatly admired for the "line of beauty" the mouldboards or breasts of their ploughs displayed.

Mr. Thomas Huckvale's celebrated patent revolving hoe for thinning or setting out turnips is really an excellent machine, which we have witnessed at work with the greatest personal satisfaction; and in the hands of one who understands its construction is well adapted for the purpose for which it is designed. It is a very valuable implement.

Mr. Isaac James, of Cheltenham, displayed a useful liquid manure distributor, or water-cart, for either of which purposes it is well adapted. These machines are likely to be more called for than ever; and we would advise the makers of them to study their construction, so as to introduce improvements, of which they are capable, and which will be needed in bringing them to bear in a perfect manner.

The ploughs of Messrs. Ransome and Sims, of Ipswich, have long been celebrated for their excellence, whilst their experience in all farming operations, and in the implements and machinery required, enables them to adapt the articles they manufacture to the exigencies of soil, situation, size of farm, &c., with the greatest precision.

Chandler's liquid manure drills, of various dimensions, manufactured by Messrs. Robert and John Reeves, of Westbury, Wilts, are machines of great utility, and will hereafter be in increasing demand as the value and importance of liquid manure become better understood.

Messrs. Richmond and Chandler, of Manchester and Liverpool, exhibited some chaff-cutters, corn-crushers, &c. Amongst other articles was a patent sack-holder—a most useful article in a granary, as, with its aid one man can fill a sack better than two can do it without. Its price is an inducement for every farmer to purchase it.

Mr. B. Samuelson, of Banbury, Oxfordshire, displayed a variety of root-cutters, graters and pulpers, chaff-cutters, malt-mills, corn-mills, and mowing-machines. These latter are now reduced in price (whilst they are increased in utility) so low as to bring them within the reach of any one having a lawn or grass-plot, which may thus be kept close-cut by a boy with far more exactness than was formerly done with the scythe by a man. Thus it is that science is driving out of practice instruments that have been in use thousands of years, such as the scythe, the flail, the reaping-hook, &c. Shall we have to add to these outcasts even the plough itself?

Mr. William Smith, of Kettering, exhibited a horse-hoe for hoeing root crops at any width, from 8 to 27 inches, either on the ridge or on the flat.

The haymaking machines of Messrs. Smith and Ashby, of Stamford, attracted a great deal of attention. These machines combine strength with lightness; and it is impossible, with common care, for them to become choked with, or entangled in, the hay. They are worked by horse-power, but sit very lightly upon the animal's back. Their steel-toothed horse-rake and patent lever hand rake are both valuable instruments.

The roller-mill for crushing oats and linseed, and splitting beans, whether or not invented by the exhibitors, Messrs. E. R. and F. Turner, of Ipswich, have been highly approved by the various Agricultural Societies on different occasions. These crushers are a great improvement upon the stampers which have formerly been used for crushing linseed and rape, and will soon wholly supersede them.

The portable steam engine of Messrs. W. W. Tuxford and Sons have some important peculiarities in their construction, which it would be unfair to omit. One of the most important is the *safety spark-trap*, by which the danger of fire from the sparks amongst corn is completely obviated. The vertical cylindric form of the boiler is considered an improvement in preventing its collapsing into an oval form by its own weight when heated, which greatly diminished its power of steam. In another contrivance the boiler flues and tubes are combined, by which means the leakage is prevented, that being the chief obstacle to the use of the vertical boiler. For particulars of their thrashing machines, "shaker," or "finishing machine," see the report by the Royal Society at Carlisle.

Mr. James Woods, of Stowmarket, exhibited a "*Phillips's patent* poppy and weed exterminator and fertilizing lever harrow." This instrument supersedes the necessity of hoeing, whilst by its gentle action upon the surface-soil it stirs the earth without disturbing the roots.

THE DINNER.

It has frequently been alleged against the English, as a proof of their propensity to eating and drinking, that no public occasion can take place without being wound up with a dinner; and that such a termination has become, as it were, one of the social institutions of the country. We plead guilty to the charge so far as the simple fact is concerned, but not to the inference our critics would draw from it; and we are quite sure that the 450 gentlemen who attended the dinner of the Bath and West of England Agricultural Association will most emphatically respond their amen to this disclaimer: that not one of them so attended for the mere purpose of eating and drinking, but for the more rational enjoyment of social intercourse and intercommunication of ideas upon the business that had brought them to Yeovil.

The festive-board was spread in a large and well-constructed Pavilion, erected in the enclosure in which the poultry show was held. C. A. Moody, Esq , M.P., presided, in the unavoidable absence of Lord Portman, who was compelled to attend the House of Lords on some special business. Amongst the guests were the Earl of Cavan, Sir Massey Lopes, Bart., Hon. J. Ryder, W. H. P. Gore Langton, Esq., M.P., Hon. W. W. Addington, E. U. Vidal, C. N. Welman, G. Harbin, J. Badward, R. N. Grenville, R. K. M. King, T. Newman, J. R. Mayo, J. Wood, W. H. Richards, G. Warry, G. Bullock, H. Liddon, R. Farrant, B. Gray, T. D. Acland, C. Gordon, S. Pitman, W. E. Gillett, R. Tucker, G. Poole, J. Gould, W. Bide, R. Donne, J. H. Highmore, J. W. Walrond, H. G. Moysey, D. Paton, J. Lyon, W. G. Rogers, T. C. Saunders, and M. Farrant, Esquires; the Reverends J. F. Thomas, W. B. Leach, and R. Mant; Professor Voelcker; Captains Giles and Bush; Messrs. Widdicomb, Coles, T. G. Meetens, J. Kingsbury, Shewbrooks, &c., &c.

The Chairman, in a short speech, and labouring under weakness, arising from latent indisposition, apologized for the absence of Lord Portman, and for his own presence in the chair; also for the absence of Mr. Miles, withheld from attending by a prior engagement.

The toasts of "The Queen," "Prince Albert," "The Mayor, Aldermen, and Councillors of Yeovil," "Success to the Bath and West of England Society," "The Exhibitors," &c., were drunk with suitable applause. It is impossible—from want of space—to give even a short analysis of the speeches which followed the proposal of each toast; we can only observe that a goodly number of excellent remarks were delivered, that the chair was well filled and ably supported, and that the whole passed off with the greatest harmony and good feeling.

We beg to express our obligations to Mr. Williams, the Director of the show-yard, as well as to the Secretary, Mr. Maule, for personal courtesies received; and also to remark upon the excellent manner in which all the arrangements were carried out, both for the accommodation of the company, and for the disposition of the stock, implements, and machinery brought together for exhibition.

JUDGES OF STOCK.

Devons.—Messrs. Samuel Humber, of Wappenbury, Leamington; S. Tresawna, of Larnellyn, Probis; Eustace Elliott, of Smeaton, near Plymouth.

Shorthorns and Horses.—Messrs. George Brown, of Avebury, Marlborough; John Gray, of Kingweston, Somerton; Edward Price, of Pembridge, Hereford.

Long-wool Sheep.—Messrs. John Morre, of Hurstbourne; William Whipple, of Thorverton; William Hodge, of Tregoing, Cornwall.

Short-wool and Pigs.—Messrs. John Beavis, of Sydling, Dorset; Jonathan Whittaker, of Bratton, Wilts; James Rawlence, of Wilton, Salisbury.

JUDGES OF IMPLEMENTS.

Messrs. Clare Sewell Read, of Braudon; Thomas Oliver, of Bodmin; J. H. Nalden, of Lechlade; R. H. Pidsley, Sowton; Stephen Smith, of Salisbury.

PRIZES FOR CATTLE.

DEVONS.

For the best bull, above three and not exceeding four years old on 1st June, 1856—1st prize, James Wentworth Buller, Esq., The Downs, Crediton; 2nd, to Mr. Andrew Hewish, Stoodleigh, Tiverton.

For the best bull, not exceeding three years old on 1st June, 1856—1st prize, Mr. John Bodley, Stockley Pomeroy, Devon; 2nd, to Mr. T. W. Fouracre, Durston, Somerset.

For the best bull, not exceeding two years old on 1st June, 1856—1st prize, Mr. Thomas Webber, Halberton, Tiverton, Devon; 2nd, to Mr. Edmund Coles, Stone Farm, Yeovil, Somerset.

For the best cow in calf (or in milk, having had a calf within six months next preceding the first day of exhibition)—1st prize, Mr. W. M. Gibbs, Bishop's Lydeard, Somerset; 2nd, to Mr. George Turner, Barton, near Exeter, Devon.

For the best heifer, in calf or in milk, not exceeding three years old on 1st June, 1856—1st prize, Mr. Thomas B. Warren, Shillingstone, Blandford, Dorset; 2nd, to Mr. Thos. Miller, Castle Farm, Sherborne, Dorset.

For the best pair of heifers, not exceeding two years old on 1st June, 1856, belonging to the same owner—1st prize, J. W. Buller, Esq., The Downs, Crediton, Devon; 2nd, to Mr. Thomas Miller, Castle Farm, Sherborne, Dorset.

SHORT-HORNS, HEREFORDS, OR CATTLE OF ANY OTHER PURE BREED.

For the best bull, above three and not exceeding four years old on 1st June, 1856—1st prize, Mr. Henry Palmer, Hinton Farm, Ilchester, Somerset.

For the best bull, not exceeding three years old on 1st June, 1856—1st prize, Mr. William Hewer, Seven Hampton, Wilts; 2nd, to Mr. William Jefferys, Maiden Bradley, Somerset.

For the best bull, not exceeding two years old on 1st June, 1856—1st prize, Mr. William Fowler, Market Lavington, Wilts; 2nd, to Mr. Francis Craddock, Lipyeat, Somerset.

For the best cow in calf (or in milk, having had a calf within six months next preceding the first day of the exhibition)—1st prize, Mr. Richard Stratton, Broad Hinton, Wilts; 2nd, to Mr. Henry Palmer, Hinton Farm, Ilchester, Somerset.

For the best heifer, in calf or in milk, not exceeding three years old on 1st June, 1856—1st prize, Mr. Richard Stratton, Broad Hinton, Wilts; 2nd, to Mr. Richard Stratton, Broad Hinton, Wilts.

For the best pair of heifers, not exceeding two years old on 1st June, 1856, belonging to the same owner—1st prize, Mr. Edward Bowly, Ciddington House, Gloucester; 2nd, to Mr. Richard Stratton, Broad Hinton, Wilts.

PRIZES FOR SHEEP.

LEICESTER OR LONG-WOOLLED.

(Not qualified to compete as Cotswold.)

For the best yearling ram—1st prize, Mr. John Partridge, Bowe, Devon; 2nd, to Mr. John Bodley, Stokeley, Pomeroy, Devon.

For the best ram, not exceeding three years old on the 1st of January, 1856—1st prize, J. W. Buller, Esq., The Downs, Crediton, Devon; 2nd, to Mr. John Bodley, Stokeley Pomeroy, Devon.

For the best pen of five ewes—1st prize, Mr. Thomas Potter, Thoverton, Devon; 2nd, to Mr. J. B. Corner, Longforth, Somerset.

For the best pen of five two-teeth ewes—1st prize, Mr. J. B. Corner, Longforth, Somerset; 2nd, to J. W. Buller, Esq., The Downs, Crediton, Devon.

COTSWOLD.

For the best yearling ram—1st prize, Mr. John K. Tombs, Langford, Gloucester; 2nd, to Mr. John K. Tombs, Langford, Gloucester.

For the best ram, not exceeding three years old on 1st of January, 1856—1st prize, Mr. John K. Tombs, Langford, Gloucester.

For the best pen of five ewes—1st prize, Mr. John K. Tombs, Langford, Gloucester; 2nd, to Mr. John K. Tombs, Langford, Gloucester.

For the best pen of five two-teeth ewes—1st prize, Mr. John K. Tombs, Langford, Gloucester; 2nd, to Mr. John K. Tombs, Langford, Gloucester.

COTSWOLD DOWN.

For the best yearling ram—1st prize, Mr. John K. Tombs, Langford, Gloucester; 2nd, to Mr. John K. Tombs, Langford, Gloucester.

For the best pen of five two-teeth ewes—1st prize, Mr. W. Gillett, Brize Norton, Oxford.

SOUTHDOWNS.

For the best yearling ram—1st prize, Mr. John Moore, Little Cott Farm, Pewsey, Wilts; 2nd, to Mr. John Moore, Little Cott Farm, Pewsey, Wilts.

For the best ram, not exceeding three years old on the 1st January, 1856—1st prize, Mr. James Harding, Higherwaterson, Dorset; 2nd, to Mr. John Moore, Little Cott Farm, Pewsey, Wilts.

For the best pen of five ewes—1st prize, Mr. John Moore, of Little Cott Farm, Pewsey, Wilts; 2nd, to Mr. Wm. Lucas, East Coker, Yeovil.

For the best pen of five two-teeth ewes—1st prize, Mr. W. Lucas, East Coker, Yeovil; 2nd, to Mr. W. Lucas, East Coker, Yeovil.

HAMPSHIRE OR OTHER DOWNS.

(Not qualified to compete as Southdowns.)

For the best yearling ram—1st prize, Mr. John Moore, Little Cott Farm, Pewsey, Wilts; 2nd, Mr. Edmund Olding, Ratfin, Hampshire.

For the best ram, not exceeding three years old on the 1st January, 1856—1st prize, Mr. John Moore, Little Cott Farm, Pewsey, Wilts; 2nd, to Mr. John Moore, Little Cott Farm, Pewsey, Wilts.

For the best pen of five ewes—1st prize, Geo. Harbin, Esq., Newton House, Yeovil, Somerset.

For the best pen of five two-teeth ewes—1st prize, Mr. Edmund Olding, Ratfin, Amesbury, Hampshire; 2nd, to Geo. Harbin, Esq., Newton House, Yeovil, Somerset.

SOMERSET AND DORSET HORNS.

For the best yearling ram—1st prize, Mr. George Coombe, Creech St. Michael, Somerset; 2nd, to Mr. Thomas Danger, Huntstill, Somerset.

For the best ram, not exceeding three years old on the 1st of December, 1855—1st prize, Mr. Thomas Danger, Huntstill, Somerset; 2nd, to Mr. Robert Templeman, North Perrot, Somerset.

For the best pen of five ewes—1st prize, Mr. Robert Templeman, North Perrot, Crewkerne, Somerset; 2nd, to Mr. George Coombe, Creech St. Michael, Somerset.

For the best pen of five two-teeth ewes—1st prize, Mr. Robert Templeman, North Perrot, Somerset; 2nd, to Mr. Thomas Danger, of Huntstill, Somerset.

MOUNTAIN SHEEP.

For the best ram, not exceeding three years old on the 1st of January, 1856—1st prize, Sir Thomas D. Acland, Minehead, Somerset; 2nd, to ditto.

For the best pen of five ewes, of any age—1st prize, Mr. James Quartley, Molland, Southmolton; 2nd, to Sir T. D. Acland, Esq., M.P., Minehead, Somerset.

HORSES.

FOR AGRICULTURAL PURPOSES.

For the best mare in foal (or with a foal by her side)—1st prize, Mr. John Caines, Chilton, Ilchester, Somerset; 2nd, to Mr. William Fowle, Market Lavington, Wiltshire.

For the best two years old colt (entire)—1st prize, Mr. John Penny, West Coker, Yeovil, Somerset; 2nd, to Mr. W. Fowle, Market Lavington, Wilts.

For the best two years old filly—Prize to Mr. G. D. Badham, The Sparrow's Nest, Ipswich, Suffolk.

For the best yearling colt or filly—1st prize, Mr. G. D. Badham, The Sparrow's Nest, Ipswich, Suffolk; 2nd, to Mr. John Anthony, Yealmpton, Devon.

FOR RIDING PURPOSES.

For the best mare in foal (or with a foal by her side)—1st prize, Mr. Hugh Stodart, East Knoyle, Hindon, Wiltshire; 2nd, to the Rev. G. F. Hodson, North Petherton, Somerset.

For the best yearling colt or filly—1st prize, Mr. James Chapman, Widworthy Court, Honiton, Devon; 2nd, to Messrs. J. and E. Sims, Coombe Farm, Sherborne, Dorset.

PONIES.

For the best mare pony of any breed, not exceeding thirteen hands high—Prize to Charles Gordon, jun., Esq., Gittisham, Honiton, Devon.

HORSES.

(SPECIAL PRIZE.)

For the best colt, gelding, or filly, foaled between the 1st day of January, 1852, and the 1st day of January, 1855—1st prize (silver medal), Mr. George Gard, Martock, Somerset; 2nd prize (bronze medal), to the Rev. C. T. James, of Ermington, Devon.

PIGS.

LARGE BREED.

For the best boar, not exceeding two years old on the 1st January, 1856—1st prize, Mr. William Hewer, Sevenhampton, Wiltshire; 2nd, to ditto.

For the best breeding sow—1st prize, Rev. C. T. James, Ermington, Devon; 2nd, to Mr. William Hewer, Sevenhampton, Wiltshire.

For the best pen of three breeding sows, not exceeding six months of age on the 1st day of June, 1856—1st prize, Rev. C. T. James, Ermington, Devon; 2nd, to Mr. Wm. Hewer, Sevenhampton, Wiltshire.

SMALL BREED.

For the best boar, not exceeding two years old on the 1st January, 1856—1st prize, Mr. Henry Palmer, Hinton Farm, Ilchester, Somerset; 2nd, to the Rev. G. F. Hodson, North Petherton, Somerset.

For the best breeding sow—1st prize, Mr. James Hoddinott, Newland, Sherborne, Dorset; 2nd, to Mr. Wm. Marden, Pen Mill, Yeovil, Somerset.

For the best pen of three breeding sows, not exceeding six months of age on the 1st day of June, 1856—1st prize, Mr. Henry Palmer, Hinton Farm, Ilchester, Somerset; 2nd, to Mr. Wm. Marden, Pen Mill, Yeovil, Somerset.

HIGHLY COMMENDED.

A Devon bull, Mr. S. H. Coram, of Trull.

A Devon bull, Mr. William Gibbs, of Bishops Lydeard, Taunton.

A Devon cow in-milk and in-calf, Mr. W. Farthing, of Stowey Court, Bridgwater.

A Devon cow in-milk, Mr. W. Farthing, of Stowey Court, Bridgwater.

A Devon heifer in-calf, Mr. Thomas Miller, of Castle Farm, Sherborne.

A Hereford heifer in-calf, Mr. William James, of Mappowder, Blandford, Dorset.

A long-woolled ram, Mr. John Bodley, of Stokeley Pomeroy, in the county of Devon.

A Leicester ram, Mr. John Salter, of Cullompton, Devon.

Pens of five mountain ewes, Sir T. D. Acland, Bart., M.P., Minehead, in the county of Somerset, and Mr. G. Spooner, of Wintershead, South Molton.

A black colt, for riding purposes, Mr. R. W. Pollard, of Berry, Totnes.

A Berkshire boar, Mr. Wm. Hewer, of Seven Hampton, Wiltshire.

An improved Leicester-breed sow, Rev. G. F. Hodson, of North Petherton, Somerset.

An improved small-breed boar, Mr. W. Marden, of Pen Mills, Yeovil.

Two Berkshire sows, Mr. W. Hewer, of Seven Hampton.

IMPLEMENTS.

Best plough for general purposes, Mr. John Eddy, Kenford.

Best subsoil plough, Mr. John Eddy, Kenford.

Best turnwrest plough, Mr. John Eddy, Kenford.

Best cultivator grubber and scarifier (wide), Mr. R. Coleman, Chelmsford.

Best ditto (narrow), Mr. R. Coleman, Chelmsford.

Best heavy drags, Mr. James Comins, Southmolton.

Best heavy harrow, Messrs. Fowler & Fry, Bristol.

Best light harrow, Mr. E. H. Bentall, Heybridge, Maldon.

Best field roller, Messrs. Cockey & Sons, Froome.

Best clod crusher or clod presser, Messrs. Fowler & Fry, Bristol.

Best corn drill, for small occupations, in hilly districts, Mr. J. L. Bowhay, Modbury.

Second best ditto, Mr. J. L. Bowhay, Modbury.

Best liquid manure or water drill, Messrs. R. & J. Reeves, Westbury.

Best grass seed distributor worked by hand, Messrs. Fowler & Fry, Bristol.

Best general manure distributor, Mr. J. L. Bowhay, Modbury.

Best horse hoe for green crops on the ridge and flat, Mr. H. Carson, Warminster.

Best ditto on steep hill-sides, specially adapted to work horizontally along the side of the hill (special prize), Messrs. Fowler and Fry, Bristol.

Best machine for setting out turnips on the ridge or flat preparatory to singling, Mr. Thomas Huckvale, Chipping Norton.

Best reaping machine, Mr. J. L. Bowhay, Modbury.

Second best ditto, Messrs. Dray & Co., London.

Best hay making machine, Messrs. Smith & Ashby, Stamford.

Second best ditto, Messrs. Wightman & Dening, Chard.

Best horse rake, for hay or corn, Messrs. Marychurch & Sons, Haverford-west.

Simplest and most practically useful portable thrashing machine, with riddle and straw shaker, not requiring more than 3¼-horse power, when worked independently of its horse gear, Mr. B. J. Webber, Newton Abbott.

Best portable four-horse gear, adapted for driving thrashing machines, Mr. B. J. Webber, Newton Abbott.

Best straw shaker, Mr. B. J. Webber, Newton Abbott.

Best machine for stamping seed out of flax, Mr. Geo. Parsons, Martock.

Best machine for scutching flax, Mr. Geo. Parsons, Martock.

Best adaptation of the thrashing machine for shelling of clover, Mr. B. J. Webber, Newton Abbott.

Best winnowing machine, Messrs. A. Pridmore & Co., Syston.

Best one-horse cart for general purposes, Mr. Thomas Milford, Thorverton, Collumpton.

Best two-horse waggon, Mr. George Milford, Thorverton.

Best and most economical rick stand, Messrs. J. Marychurch & Sons, Haverford-west.

Best chaff cutter, worked by horse or steam power, Messrs. Richmond & Chandler, Manchester.

Best chaff cutter, worked by hand, Messrs. Richmond & Chandler, Manchester.

Best machine for grating or pulping roots, Messrs. Woods, Stowmarket.

Best turnip cutter, Messrs. Marychurch & Sons, Haverford-west.

Best corn and pulse bruiser, worked by hand, Messrs. Whitmee & Co., London.

Best gorse bruiser, Messrs. Barrett, Exall, & Co., Reading.

Best and most economical steaming apparatus, for preparing food for cattle, pigs, &c., Mr. B. J. Webber, Newton Abbott.

Best churn, Messrs. Dray & Co., London.

Best cheese press, Messrs. Wightman & Dening, Chard.

Best apple mill, calculated to crush the pips also, Messrs. Wightman & Dening, Chard.

Best cider press, Messrs. Dray & Co., London.

Best cooking apparatus for farm kitchens, Mr. J. M. Fisher, Taunton.

Best field gate, not less than nine feet in length, fitted with hangings and fastenings, Mr. Samuel Rowsell, Buckland St. Mary.

SPECIAL AWARDS.

Tubular gates and stop, Messrs. Dray & Co., London.

New invention of Self delivery to horse rake, Messrs. Marychurch & Sons, Haverford west.

American hay collector, Mr. Samuel Rowsell, Buckland St. Mary.

CERTIFICATES OF MERIT.

Field roller, Mr. John Feaver, West Camel.

Cultivator, grubber, and horse hoe (narrow), Mr. R. Collins, Trent.

Phillips's poppy extirpator, Messrs. Woods, Stowmarket.

HIGHLY COMMENDED.

Cooking apparatus, Mr. Thomas Richards, Wincanton.

One-horse cart, Mr. George Milford, Thorverton.

Chaff cutter, Mr. H. Carson, Warminster.

Cheese press, Mr. H. Carson, Warminster.

Heavy harrow, Mr. E. H. Bentall, Heybridge Maldon.

General purpose plough, Mr. Richard Pitts, Kenn.

Chaff cutter, Mr. Hugh Carson, Warminster.

Clod crusher, Mr. James Comins, Southmolten.

Cultivator, grubber, and scarifier, Mr. H. Carson, Warminster.

COMMENDED.

Two-horse waggon, Mr. Thomas Milford, Thorverton.

Straw shaker, Mr. Thomas Brinsmead, Great Torrington.

Chaff cutter, Messrs. Smith & Ashby, Stamford.

Chaff cutter, Mr. Hugh Carson, Warminster.

Churn, Mr. E. Archer, London.

Washing and mangling machine, Messrs. Pearson & Co., Leeds.

Corn and pulse bruiser, Messrs. Richmond & Co., Manchester.

One-horse cart, Mr. Robert Lane, Cirencester.

One-horse rake, Mr. James Lovell, Glastonbury.

Horse hoe, for working on sides of hills, Mr. M. L. Roberts, Maiden Newton.

Horse hoe, Mr. James Comins, Southmolton.

Horse hoe, Messrs. Fowler & Fry, Bristol.

Subsoil plough, Mr. E. H. Bentall, Heybridge.

General purpose plough, Messrs. Wightman & Dening, Chard.

Machine for pulping roots, Mr. E. H. Bentall, Heybridge, Maldon.

Light harrow, Mr. James Comins, Southmolten.

Field roller, Messrs. Wightman and Dening, Chard.

Cultivator, grubber, and scarifier, Mr. E. H. Bentall, Heybridge.

Corn dresser, Mr. Robert Impey, Street.

Two-wheeled iron plough, for general purposes, Mr. J. Wright, Sandford.

Two-wheeled iron plough, for general purposes, and fitted with paring share, Mr. J. Wright, Sandford.

THE LONDON, OR CENTRAL FARMERS' CLUB.

THE EXPEDIENCY OF CONVERTING GRASS LAND INTO TILLAGE.

The last monthly meeting of the Club, previous to the adjournment during the summer and autumn recess, was held at the Club House, Blackfriars, on Monday evening, June 2. The chair was taken by Mr. Trethewy, in the room of Mr. J. Wood, of Ockley, Sussex, who had undertaken to introduce the subject appointed for discussion, viz., "The expediency of converting grass land into tillage."

Mr. WOOD said—Gentlemen: When I suggested the subject of this evening's discussion to the committee I did not anticipate that the task of introducing it to your notice would have devolved upon me, and least of all did I feel myself competent to furnish much information respecting it. I had hoped, indeed, that my position as chairman for the year would have entitled me to claim exemption from the duty, and that some member would have been found to act as my substitute. That hope failing me, I have no alternative left but to do my best, premising, however, that my experience and knowledge do not extend far over the country; that they are confined more especially to the south of England; and that consequently there may be many local circumstances, *pro* and *con.*, of which I may be ignorant, but which I trust in the course of the evening will be brought forward by other members. I believe this question has not been discussed here before, although it is one of great practical importance to us as farmers, and might materially affect the state and position of this country as a nation; but we have discussed the best *mode* of converting grass land into tillage, and its subsequent treatment; and I hope, therefore, we shall avoid these points on the present occasion, except so far as they may actually bear upon the subject under consideration. That subject I take to be, whether it is expedient in this country to convert well-managed grass-land into tillage, to be equally well-worked and managed. Now this, I believe, is a much-disputed question, and no doubt a variety of sound objections, arising from local and special circumstances, may be adduced against converting land from a state of natural grass into tillage. If land is conveniently situated for receiving the drainage of a town, or for being turned into a water meadow; if it be so steep and hilly as to make it difficult or expensive to cultivate; or if it be on chalk or other rock, with so little depth of mould as to render it unfit for the production of root crops or corn—in all such cases it would be undoubtedly wrong to bring it into cultivation. Again, when grass is specially required, as for milch cows, to a certain extent, in the neighbourhood of towns; and for meadow hay, as in the neighbourhood of London; or where, from the heights or exposed position of the land, the climate is of such a nature that wheat cannot in ordinary seasons come to perfection, unless this objection is counterbalanced by extraordinary applicability of the land for the production of swede turnips or other crops; these cases I regard as exceptional, and as not bearing on the subjects immediately before us, and probably there may be several others of like description, though it would be profitless for me to enumerate them even if they occurred to me. As a general rule I may take it for granted that the owners of land in grass are in favour of continuing it in that state, whilst the occupiers are for breaking it up. The breaking-up of grass-land endangers the landlord's chances of rent, from the tenant not farming the land so as to keep it in a condition to command the same rent as it had previously done in grass, and which by good management and liberal manuring may be done. In fact, he runs the risk of having the land thrown on his hands, both from the tenant allowing it to deteriorate, and also from the circumstance that there is more competition for grass-land than for arable, because the latter not only requires a larger amount of capital to do it well, but also requires that capital to be invested for a much greater length of time without any return upon it; whereas a tenant can always for several years obtain good crops from fresh broken-up land, without being at much expense for manuring it, and consequently he incurs no risk of loss from hard cropping, at all events for the first seven years of his occupation. But, as all differences of this kind between landlord and tenants are, or ought to be, adjusted by payments of more or less rent, the shortest way for us to consider the question immediately before us is to take the case of a party occupying his own land. An individual in such a position has to consider whether more produce may be obtained from land (not exceptionally situated as I have before described) by cultivation than by continuing the same in grass; what will be the difference in the expense; and whether the extra produce obtained by cultivation will compensate for such expense, and for the extra capital, skill, attention, and risk incurred. I think that no one will dispute that more produce may be obtained by cultivation of land than by leaving it in natural grass, however well managed; and I do not know how this may be set forth more clearly than by taking a given piece of land of ordinary quality, and showing what may be probably produced from it in grass, and under cultivation, with given prices for produce. Now, as I have never put forth any pretensions as a farmer, and aspire to the possession of no professional superiority, I may frankly make the admission that I do not know the general weight of an acre of grass when cut for hay. Further, I have asked several of my neighbours, but have not met with any one that has ascertained it. (Hear, hear.) I set my foreman to measure off a square yard of grass in the orchard that he estimated would make 1¼ to 1½ tons of hay per acre. This he mowed and found to weigh, allowing for being wet, 10 lb., which, at 4,840 yards to the acre, would be equal to 21 tons 12 cwt. 16 lbs.; but how far this grass would go as food in its green state, at present I can form do idea. My man thought it would be a "tidy bait for a small donkey" (laughter), but that "an old cow would soon tuck it down" (another laugh), and as I can form no estimate of the value of green grass I shall pass it over. For grazing stock upon the second or middling stamp of land in my own district, paying, say 35s. for rent, tithes, and taxes, I should estimate—

				£	s.	d.
Keep of a two-yearling steer from May 1 to Sept. 17, twenty weeks at 2s. 6d.				2	10	0
Ditto of five sheep through the winter at 6s.				1	10	0
Costs and expenses :—				£4	0	0
Rent, tithes, and taxes	£1	15	0			
Spreading droppings, fencing, and weeding, &c.	0	3	0			
	1	18	0			
FOR MAKING HAY.						
1¼ tons, at £4	5	0	0			
After grass	1	10	0			
Costs and expenses :—				6	10	0
Mowing and making	1	0	0			
Manure, &c.	1	15	0			
Rent, tithes, and taxes	1	15	0			
	4	10	0			
Total produce				10	10	0
Total costs				6	8	0
Two crops				4	2	0
Total profits				£2	1	0

I therefore make the total profits on an acre of grass land to amount to £2 1s., to pay for time, skill, judgment, capital, and risks. I will now proceed to estimate the profits on the same stamps of land in cultivation, taking the system of rotation and management that I usually adopt myself, viz., a six-shift course, with alternate white and green crops, and taking wheat twice in six years, though I must remark that when wheat is likely to sell as high as has lately been the case, I have substituted wheat for oats, and grown it every other year. My rotation of crops is as follows:—1st year, winter beans; 2nd ditto, wheats; 3rd ditto, tares or mangold wurtzel; 4th ditto, oats; 5th ditto, seeds; 6th ditto, wheat. Now as the non-professional man who is in search of information ought not to be afraid to expose his ignorance, I shall give you my estimates of produce and expenses, separately, thus:—

FIRST YEAR.—WINTER BEANS.

3½ qrs., at 42s. per qr.				£7	7	0
Costs and expenses :—						
Broadsharing and cleaning, per acre	£0	5	0			
Harrowing and picking off	0	4	0			
30 yards dung, at 3s.	4	10	0			
Ploughing once, deep	0	15	0			
Harrowing and drilling	0	5	0			
Seed	0	10	0			
Horse hoeing, three times, at 2s.	0	6	0			
Hand hoeing	0	4	0			
Rent and taxes	1	15	0			
	£8	14	0			

SECOND YEAR.—WHEAT.

4 qrs. per acre, at 60s. per qr.				£12	0	0
Costs and expenses :—						
Broadsharing twice	£0	5	0			
Harrowing and picking off	0	4	0			
Ploughing	0	12	0			
Lime, guano, or other manure	2	0	0			
Seed, 1½ bush.	0	11	3			
Harrowing four times	0	4	0			
Rolling	0	1	0			
Couch, &c., picking	0	5	0			
Drilling	0	3	0			
Rent, tithes, and taxes	1	15	0			
	£6	0	3			

THIRD YEAR.—FALLOW CROP.

Tares, feed 300 sheep, 1 week, at 4d.				£5	0	0
Costs and expenses :—						
Couch digging, &c.	£0	2	6			
20 yards dung, at 3s.	3	0	0			
Seed, 6s. per bush.	0	13	0			
Ploughing	0	14	0			
Harrowing and sowing	0	3	0			
¼ lb. cake per sheep, 1d. per lb., 75 per day, 7 days, 515 lb.	2	2	11			
	6	15	5			
Rent, tithes, and taxes	1	15	0			
	£8	10	5			

MANGOLD WURTZEL.

1 root, 4 lb., 2 ft. wide and 2 ft. apart, 1 lb. per foot, 19 tons 8 cwt. 104 lb., say 20 tons, at 10s.				£10	0	0
Costs and expenses :—						
Shaving and cleaning	£0	9	0			
30 yards farm-dung, and spreading	4	10	0			
Ploughing	0	15	0			
Spring scarifying and cleaning	0	5	0			
Harrowing and drilling	0	5	0			
Seed	0	8	0			
Drill manure	1	5	0			
Horse hoeing	0	5	0			
Hand hoeing	0	10	0			
Rent, tithes, and taxes	1	15	0			
	£10	7	0			

	£8	10	5	£5	0	0	
	10	7	0	10	0	0	
Total cost, 2 crops	18	17	5	15	0	0	Total produce.
	9	8	8½	7	10	0	
	7	10	0				
Loss	£1	18	8½				

FOURTH YEAR.—OATS.

8 qrs., at 24s. per qr.				£9	16	0
Costs and expenses :—						
Ploughing	£0	14	0			
Seed	0	16	6			
Drilling and harrowing	0	5	0			
Rent, tithes, and taxes	1	15	0			
	£3	10	6			

FIFTH YEAR.—SEEDS.

1½ tons clover, at £4		£6 0 0
Second cut, 1 ton		2 10 0
		£8 10 0
Costs and expenses:—		
2½ galls. seed	£0 10 0	
Rent, tithes, and taxes	1 15 0	
Cutting, making, and stacking	0 10 0	
Do. second cut	0 7 0	
	£3 2 0	

SIXTH YEAR.—WHEAT.

5 qrs., at 60s.		£15 0 0
Costs and expenses:—		
Ploughing	£0 12 0	
Seed, 2 bush.	0 15 0	
Drilling, harrowing, &c.	0 7 0	
Lime, guano, or other manure	2 0 0	
Rent, tithes, and taxes	1 15 0	
	£5 9 0	

Now the total of the six years is:—

Crop.	Cost and expenses.	Produce.
Beans, first year	£8 14 0	£7 7 0
Wheat, second year	6 0 3	12 0 0
Tares or mangold, third year	9 8 8	7 10 0
Oats, fourth year	3 10 6	9 16 0
Seeds, fifth year	3 2 0	8 10 0
Wheat, sixth year	5 9 0	15 0 0
Total	36 4 5	60 3 0
Deduct		36 4 5
Divided by six years		23 18 7

This gives as the annual average profits on land cultivated	3 19 9
Against the profits on the land in grass	2 1 0
Or a difference in favour of cultivation amounting to	£1 18 9

A great part, if not the whole, of which, I think, would be absorbed by the buildings requisite for land under cultivation. Under these circumstances I come to the conclusion that unless we can reduce the costs of cultivation by means of machinery, or bringing our labourers down to the diet and condition of the continental labourer—which, happily, our poor laws forbid—it will not pay to bring green land under the plough. I am aware that these estimates are speculative, but I do not see a more practical mode of calculating whether it will answer the purpose of an individual better to bring his land into cultivation, or to let it remain in grass. I am also aware that I may be committing great errors in my estimates, but I trust to you to put me right on these points. I have often heard the opinion expressed by practical men, that stiff land should be broken up, but that land of a good light loamy nature, because it bore good grass, ought not to be so treated. Now it strikes me that the expense of cultivation is the main obstacle in this country, and, in fact, one can see scarcely any other objection to breaking up land. Therefore, as good light loamy soils may be cultivated at much less expense, it would seem that they would pay the best under cultivation. With such soils a grazier may do well; but if more in proportion may be made by cultivation, then why should they not be brought under the plough? And if soils like the old pasture land of the midland counties, for instance, were cultivated generally, it strikes me as not improbable that they would produce enough corn to render the country independent of foreign supplies, whilst the returns from them would also be much quicker as well as greater than from the poorer soils. Moreover, as they might be laid down again, and brought to a good strong turf, at much less expense, there would not be so much risk of loss as in breaking, because the latter are so expensive to work up poor stiff lands. A few months since I saw some poor down lands broken up in Dorsetshire, which I apprehend would produce under cultivation in one year as much as they would in three or four years in grass; and as they are lighter, and consequently less expensive to work than the heavy lands, the owner appeared to me to be acting perfectly right. If the ploughing up of meadow and pasture lands involved a diminished supply of animal food, which it would do if cultivation were now conducted as it generally was about 30 years since, undoubtedly it would be inexpedient to put more capital and labour into the soil than would suffice to bring it up to the first step beyond a state of nature, which I think I may define well-managed grass land to be. But it is found from experience, and has been the practice with many for some years, as was not very long since shown in this room—I allude to our meeting when Mr. Wallace introduced the subject—that meadow hay, cannot be economically used to any great extent, and that in most instances, in the feeding of cattle and horses, it may be profitably dispensed with altogether. In fact, as far as I can see into the matter, meadow hay seems most essential for the feeding of milch cows in winter, on account of the sugar contained in it; but Mr. Horsfall, who was here at our last meeting, tells us he can make the best of butter from feeding with rapecakes and steamed bean stalks, and it now seems the general opinion that the use of meadow hay is by no means economical. Now, if we can dispense with natural grass for the purpose of hay for winter feeding, still less do we want it in summer. I believe, except in marsh lands, the grazing of sheep on pastures is not much followed. I am strongly of opinion that the feeding of beasts in summer on old pastures, unless where exceptionally circumstanced, is not making the most of the land. I find it answer my purpose to turn my beasts out of a night, and get them into single boxes by day in hot weather, giving them a little cake as I want them to feed faster or slower, and I have not the least doubt that if I ploughed up my pasture land where these beasts run, I should obtain a much greater amount of beef by feeding in the spring months on mangold wurzel, rye, winter barley, and trifolium, and in the summer and autumn months on tares, clover, cabbage, and turnips, and in the winter months on swedes, than I now do on old pasture in summer only, besides being able to turn every particle of dung to profitable account in the growth of corn, which is not now done with the land in pasture. It may be objected that in dairy countries the practice of letting off grass land with a number of cows upon it to a dairyman, at a price agreed on, could not be continued if the land were broken up; but it strikes me that a better practice would be to sell milk at per gallon for the year or season to the dairyman. I keep a dairy of 20 Alderney cows, and my practice is to stump them down with a chain and a strap round the horns through April and May; but when the fly comes in June, I feed them on tares and what I can mow for them during the day, and stump them out of a night, when they are not annoyed by the prick-fly. After haying I turn them loose on the after-grass, till the weather gets cold, when I take them in, first of a night, and then altogether, and put them on cabbage and hay, which latter, I think, may be dispensed with by substituting straw with rape-cake, molasses, bran, pollards, &c. I plant my cabbages after feeding off the tares with sheep; my land being too stiff to work for a turnip season at such a time, and the cabbage seems to come in so useful as to pay for the labour consumed in planting, hoeing, and liming it when attacked by the slug. I should here inform you that when I commenced this inquiry I was prejudiced in favour of breaking up land for profit, and I suspect many others are similarly prejudiced, because we all see, at every stage of our business, how much more produce is obtained from land under cultivation than from land in grass. We do not see so plainly and distinctly that if the price is in any way prevented from taking its natural course, as a fair measure for exchanging that produce for other commodities, we must look more to keeping down the costs of production; and before we can do much in this way we must call to our aid and make available the use of steam and machinery, to a much greater extent than has yet been done. Until we can so do, we must decrease our expenses, or, at all events, not increase them by putting more capital into the land in the shape of mere labour. With prices as they have been of late years, farming is a capital business, and no one engaged in it has found the costs and expenses to be swallowing an undue share of the products; but if we are to come down to continental prices, the quality and quantity of our produce may be the same, whilst the price will not pay back the costs of production, inasmuch as those costs in this country are so much enhanced by taxation. In our present position, then, we have only steam and machinery and increased skill to look to, *versus* the enhancement of labour and increase of costs by taxation. As individuals we have only to look to the net profit, and it matters not to us whether we obtain it by increase of produce or by diminution of labour. The most prudent course is the one the farmer should take, and that is decidedly not to incur a large expenditure of capital by commencing such a work as that of breaking up land, which like a railway, when finished, must be carried on, not so much to obtain profit on what may be, as to save the loss on what has been, expended. I was of a decidedly different opinion until making these calculations. I have now endeavoured to put everything according to the best of my judgment, and I think if I have erred in any respect it is in not having set down enough or in having omitted some expenses. Looking at this question as regards the nation, it may perhaps, though I doubt it, be desirable to snub one great branch of industry for the benefit of others; and when the country drifts into a war, to have such a system in operation as will most effectually prevent the finding of young men in the rural districts to serve in its armies; and drive us to subsidising other nations, and to hiring and kidnapping the subjects of other governments to fight for us; but as these contingencies may be avoided without any corresponding sacrifice, but, on the contrary, with advantage as regards the community at large, they ought not to be incurred. It is as easy to deny the *possibility* of France, Russia, and America being leagued against us, or of either of those great and powerful nations being at war with us, as it was for our friend Richard Cobden to "crumple up" the Russian empire in the form of a piece of paper; but, if we have it in our power, we may as well provide for such a contingency, and not place ourselves by your shortsighted policy in the position of cutting off our supplies of the only things in which we are inferior to those nations, viz., men and provisions. I believe we have ample space for supplying, both as easily and as at little loss to the country, as if we continued to get them from abroad. I do not agree with Mr. Wren Hoskyns in laying much stress on the enclosure of commons and waste lands, as a means of producing so much more corn in the country. I think you will see that the prices we have had lately will have more effect on the production of corn in this country, than all the enclosures in any five years together. I am not, and never was, an advocate for agricultural statistics. They may, however, be made useful, and turned to the advantage of the farmer in this respect. They will show where and how much land is not cultivated and made the most of, and raise the question why? Gentlemen, it is not protection by import duties that would be of any substantial service to the farmer, or advantage to the country. We do not want any artificial bolstering up of prices. What we want is simply such a state of things as will cause capital to flow, and be invested where it is most required, and where it will benefit the country mostly, and I do not think that can be the case whilst the Joint Stock Banks are dividing their 20 and 25 per cent. profit. I should suggest, therefore, that when the Bank of England charter comes under discussion, that body should be directed not to confine their issue of notes to fourteen millions, but should increase it by fifty millions every six months, till it amounts to the sum of the indirect taxes; that bullion should be bought and sold by it at its market price; and that they should be bound to keep a certain sum to pay the balance of foreign exchanges, the profits of such issue to go into the revenue, and the income tax to be discontinued. Gentlemen, I am not going into the currency question, as it is called, although it bears on our subject so closely that I could not conclude without thus briefly alluding to it. To return to the question, you will see from what I have said that I do not think it expedient for a farmer to invest his capital in breaking-up grass land in this country whilst the cost and expense of labour are so enhanced by taxation, and in concluding I would propose a resolution to this effect:—"That although a much greater amount of produce may be obtained from arable land, the cost of cultivation in this country generally, as compared with the prices likely to be realized for the produce, is too high to justify the bringing grass lands into tillage."

Mr. Payne said he had risen rather with the view of eliciting something useful from others than in the expectation of being able to throw much light on the subject himself. He thought Mr. Wood had laid too much stress on labour and taxation, in relation to the cultivation of the soil. The subject stated on the card was, "The Expediency of converting Grass Land into Tillage." It appeared to him that it would have been well to insert the word "inferior" before "grass land." Probably no one in that room would be disposed to break up grass land which was necessary and profitable for feeding bullocks. If land were not worth 25s. an acre to graze, it might then become a question whether it ought not to be broken up. He happened to live in a neighbourhood where there was a large proprietary, and where the breaking up of inferior grass land had been carried out to a great extent. In a case in which 100 acres of pasture land was broken up, on a cold-land farm of 300 acres, the land having been thoroughly drained to begin with, the result was that the tenant more than doubled his produce. Taking into account the straw which the land newly broken up produced for six or seven years afterwards, without any extraneous assistance, it would be found that, in that way, the breaking up of grass land materially benefited the previous arable land of the farm, which had perhaps not grown nearly sufficient to manure itself. Happily, they could now obtain artificial manures; but if they confined themselves to the produce of the farm, nothing could be more beneficial to the soil than the tenant's being allowed to break up inferior descriptions of grass land. One result of that was, that the tenant was enabled to grow a much larger quantity of clover; and he could state, from experience, that farms which had been thus treated had maintained one-third more sheep than they did before the inferior grass land was broken up. Independently of the benefit derived from it by the tenant and by the landlord, it was, in his opinion, a national benefit to break up inferior pasture. It was a change with which he had himself been personally connected. Before allowing any tenant to break up a large quantity of inferior pasture, he would take care to ascertain whether or not he had sufficient capital to carry out the work in the best manner; but, after having satisfied himself that there was no want of capital, he should entertain no doubt as to the success of the process. He was aware that he was treading on what was in some respects very tender ground. He would be sorry if the proprietors of this kingdom should think that all that farmers wanted was to get possession of their land, and stick the plough in it (laughter). He wanted to convince landlords, what he was sure was the fact, that it would be a great benefit to them to have inferior pasture lands broken up (Hear, hear). As he had before observed, the land ought first to be thoroughly drained. The land of which he had previously spoken was a tenacious clay, lying in a cold district. The first step towards making such land useful was thorough drainage. When the drainage was accomplished, there were two modes in which the land might be brought into tillage. One was to plough-in the turf; another was to pare and burn. His own opinion was that the latter mode was the best, and for this reason—that it exterminated all those kinds of insects which were so prejudicial to farming. Where the turf had been ploughed in, he had observed that, for four or five years after, the farmer was pestered with the wireworm and other insects of an injurious character; and the only way of avoiding that evil was, he was convinced, to pare and burn, instead of ploughing in, when the land was converted into tillage. He was confident, too, that—in the first five or six years, at all events—the return would be greater if the turf had been pared and burned, than if it had been ploughed in. It would be found that the ashes produced by burning worked down into the soil, and very much improved its condition. Three or four years after land was converted into tillage, he had seen ashes ploughed up, not less than a foot below the surface; and it was his opinion that the presence of ashes in the soil materially assisted the growth of the crops. As far as his own experience went, he had always found that, in the first few years, land which had been burnt always succeeded much better than land which had been ploughed in. He was rather surprised to hear Mr. Wood raise a question as to the expenses of labour. Every one who had broken up land of the description which he had mentioned, when he had conversed with him on the subject, had stated at once that he could make much more of the farm, in consequence, than he did before; and he (Mr. Payne) contended that, considering the artificial manures which were now within their reach, the cheaper corn was, the more they ought to grow (Hear, hear). On that point he was at issue with Mr. Wood. There was another point on which he was at issue with him: he referred to his observation that, if the breaking up of land were not found to answer, the land should be restored to its original state. To put land into pasture again, in as good condition as it was before, would require half a lifetime.

Mr. WOOD said he did not speak of inferior land.

Mr. PAYNE continued: He admitted that it was very questionable whether it would be wise to convert superior pasture into arable. As he stated before, he thought the line should be drawn at about 25s. per acre; and most practical men would bear him out in saying that the breaking of pasture land below that value would be beneficial both to the farmer and the landlord. He was a very strong advocate for the breaking up of inferior pastures of the description that he had mentioned.

Mr. SMYTHIES (of Cheshire) said, having broken up a good deal of poor pasture land about thirteen years ago, one of the stipulations being that he should lay it down again in pasture, he wished to observe that the question, whether or not a particular pasture should be broken up, depended very much on the climate and the soil. If the climate were moist, it would often be most advantageous to keep the land in pasture: and the same might be said if the land were strong and tenacious, and difficult to plough. He thought, moreover, that for want of manure a great many poor lands had not hitherto had a fair chance. Where the climate was moist, instead of breaking up land, he had applied to it manure which he had made, and bought artificial manure for tillage land; and he had found that course answer exceedingly well. As regarded paring and burning, which were so strongly recommended by Mr. Payne, he was sure that that mode of proceeding would not do on a sandy soil, however it might answer in the case of other soils. They should, he thought, always endeavour to avoid partial remarks in speaking on a general subject; and in the present instance, it was especially necessary to bear in mind differences of soil and climate. In the case of the farm to which he had referred, the soil was sandy and the climate moist. Having stipulated to lay the land down again in pasture, he had done so; and he must declare that, although the farm was situated near Liverpool, where all kinds of produce fetched the best prices, yet he found that the grass and stock grown on that land paid better than anything else (Hear, hear). Some years ago he was a great advocate for the breaking up of grass lands, but he now thought that the best return would generally be secured by draining and manuring them. He had never met with a person, who farmed old tillage land, who had not found great difficulty in getting grass seeds; and if there were not everywhere some grass lands to fall back upon, the scarcity of seeds might render it very difficult to produce grasses, and especially clover, to a sufficient extent. He would strongly recommend all who had poor grass lands to give them a good dressing of manure every other year for a few years, before making up their minds to plough them up.

Mr. WILSON said it appeared to him, from the little experience which he had had as a farmer, that if cake and other manures were judiciously applied to grass lands, there would be as little cause to complain of poor pasture land as there was of poor tillage land. Looking at the prices of late years, he thought it was not desirable to encourage the notion that pasture should be ploughed, if it were capable of being farmed profitably in its existing state; and, indeed, there were more tenants to be found for farms with grass land, or with a large proportion of grass land, than for farms which consisted chiefly of arable land. It was important to consider whether or not tenants generally would be willing to give a higher rent for land if it were ploughed up than they would if it remained in its original state; if not, the landlord might be prejudiced without any advantage being obtained by the tenant. He believed that the manuring of grass lands twice a year would in many cases prove profitable.

Mr. THOMAS said he had had a little experience of farming in three counties; namely, Shropshire, Essex, and Bedfordshire. There could, he thought, be no question with regard to a great deal of the poor land in Cheshire, that it was desirable to keep such land in pasture. Much depended, of course, on the nature of the soil; but, generally speaking, where there were springs beneath the soil a poor land was best adapted for grazing. In Bedfordshire there had been a great deal of pasture land broken up within the last three or four years; and there was a great deal more which ought, in his opinion, to be dealt with in the same manner. There was in that county a considerable quantity of grass land which was not worth 5s. an acre to graze, and which might be made very profitable if broken up. On one point he would go further than Mr. Payne had done. He had no hesitation in declaring that he would not break up land which was worth £1 per acre as grass land. It was a great mistake to break up pasture which would make a bullock half or two-thirds fat. There was, however, a great deal of grass land in Bedfordshire and other counties, which, instead of feeding animals, literally starved them; and as the ploughing of such land would benefit the landlord, the farmer, the labourer, the tradesman, and in fact every class of the community, there should be no hesitation in breaking it up. There was a great deal of land in Essex, where he had farmed, to which the same remark would apply; though he must remark that in that county there was a large quantity of squaly or springy land, which, though it did not produce much grass, was well supplied with water, that in some degree supplied the place of grass. He thought it was very desirable that the landlord should in all cases know something about his tenant before he allowed him to break up pasture land with the view of bringing it under tillage cultivation; but he knew that there were thousands of acres of such land in this country, the bringing of which under tillage would be beneficial to the landlord, the tenant, and the community at large. When grass land was broken up, it should always be well drained and manured.

The CHAIRMAN said, as no other gentleman had risen, he would himself make a few remarks. Mr. Wood had introduced a new feature into the question of the breaking up of grass lands. It had been held for some time, and in fact had appeared to be a pretty unanimous opinion, that a certain description of inferior grass lands might be advantageously converted into tillage. It was, however, quite a new feature to talk of converting into tillage such lands as they saw in Leicestershire pastures (Hear, hear). He thought that if that were done it would be found that a very great mistake had been committed; because, although the land might be laid down again in pasture, in the event of tillage not having been found to answer the purpose, it would be many years, perhaps he might say many generations, before its condition would be equal to what it was before it was broken up. While upon that point, he might remark with regard to a difference of opinion between Mr. Wood and Mr. Payne, that probably they had in view different descriptions of land; Mr. Wood speaking of the Leicestershire lands as returning to pasture, which they soon would do; while Mr. Payne spoke of the poor soils, which would be longer in returning to their former condition. As regarded the mode of converting grass land into tillage, he thought a great deal depended on the kind of pasture which was upon the land, and upon the nature of the soil. In the case of a rough sedgy grass, never grazed down, he thought it was best to pare and burn; because the burning was more effectual than ploughing, in a mechanical point of view; but in the case of a light sandy soil, bearing very little herbage, and that little generally of a poor description, he believed paring and burning would do more harm than good. With this last description of soil his experience, so far as it extended, showed that ploughing-in was the preferable course. For example, in a large field, part of which was pared and burnt, and another part ploughed-in, there was very little difference in the produce for the first three or four years; but afterwards the land which had not been pared and burnt produced the best crops. Then, again, climate made a great difference; and it was a remarkable illustration of the usefulness of the discussions of that club, that whereas a man who lived in a dry climate thought all descriptions of land would do best in tillage, another who lived in a humid climate knew that there was land of the finest description—for example, Craven, in Yorkshire—which, while it produced grass in the greatest abundance, would be almost useless under the plough. As to seed, there no doubt had been, and were still, in many districts, great difficulties in obtaining a sufficient quantity of them; but he thought that had the red clovers been cultivated a little more sparingly, and varied with other artificial grasses, the difficulty in that respect would not have been so great. Supposing that they were upon the four-course shift, the growth of red clover should, he thought, be limited to once in eight years, which he knew to be the practice in many districts, and then there would not be so much loss of crop as where clover was the only grass grown. In the county of Bedford, which had been alluded to by Mr. Thomas, he had seen a great deal of inferior grass land ploughed up with great advantage. Probably there was scarcely another county in the kingdom in which, within the last fifteen or twenty years, so much inferior grass land had been converted into tillage. He had himself witnessed the breaking-up of a considerable portion within the last ten years, and had no hesitation in saying that more corn, more mutton, and more beef had been produced since than was produced before. As to grass lands being more sought after than ploughed land, he thought that depended entirely on the quality of the land. Poor grass land was held very cheap indeed; but it often happened that it would make good corn land. In such a case there would be no difficulty in finding a tenant who would give a very great increase of rent if the land were ploughed up; and although he might take a good deal out of the soil in the first few years, afterwards it would still be worth much more than it was when he first took possession. He saw no difficulty in converting land of that description into arable. If they could not make good grazing land out of sandy or light soils, they might at all events convert it into tillage with very great profit.

Mr. WOOD replied: He had, he said, always been of opinion that the breaking-up of grass land would be beneficial in a national point of view. On that point he did not differ from any of the speakers; but he contended that farmers must look to themselves, believing as he did that it was through every man's doing that, that the country generally was most likely to thrive in the long run. What was needed, in regard to this matter, was a state of things that would enable every man to combine the furtherance of his own interest with that of the country. What he had said on the subject had special reference to what it was expedient for men to do for their own interest. What he had wished to point out was, that although they might grow a much larger quantity of produce in consequence of breaking-up grass land, the result might not, on the whole, be profitable. In considering the enormous difference between the produce of land in pasture and its produce under tillage, they were too apt to lose sight of the great expense of converting grass land into tillage. Expense was the great check upon the breaking-up of pasture. What he said, or intended to say, with regard to the grass lands of the Midland Counties, was that a large proportion of them would, if ploughed up, soon return to grass again, and that they would yield a large amount of produce for a slight expense in cultivation.

Mr. SMYTHIES observed that nearly all the grass lands of Leicestershire and Northamptonshire had, at one time or other, been ploughed up.

On the motion of Mr. Payne, seconded by Mr. Thomas, the following resolution was adopted:—

"That this Club is of opinion that Grass Land of fair quality will be found most profitable in that state; but that inferior pastures would yield more profit to the occupier, a greater rent to the landowner, and more food to the community, if converted into tillage."

Thanks were then voted to Mr. Wood for the manner in which he had introduced the question; and the proceedings terminated with a similar compliment to the Chairman.

VILLAGE LIBRARIES AND READING ROOMS.

Sir,—Allow me with as much brevity as possible to draw your attention, and the attention of your readers, to a subject of great importance: this is the establishment of Village Libraries and Reading Rooms. I wish not to be thought to take credit to myself for introducing anything new: I only want to advocate a plan for the progressive education of the working classes, which has already been successfully tried by the Hants and Wilts Educational Society.

Mr. Edward Baines, in his "Remarks on the Speech and Plan of Lord John Russell," proves well enough that the power of the voluntary principle is sufficient to ensure the adequate amount of education to the people of this country. He affirms, too, that the existing deficiency of education does not prove that any considerable number of children are *without* education, or as some express it, "*wholly uneducated;*" but only that the education is *for a shorter term* than is desirable. He shows that *nearly the whole of the children go to school*, but remain there only so long as to average five years for the entire number.

It is the excessive demand for child-labour that seems to stand in the way of the intellectual progress of this country. But who shall say to the mechanic and the agricultural labourer, "Your children shall not render you any assistance in the support of the family till they arrive at the age of fifteen; till then they must go to school?" Such a system of compulsion may do for Austrians, but never for Englishmen. Freedom is better than education! better a thousand times than any education centralization would confer. Education is good only when it capacitates; but compulsory Governmental education can only exist by incapacitating. Discussion and free inquiry are the only means to the former; by the latter these are inadmissible.

But it seems to be the opinion of some, that because we have not a national system of instruction the whole country must be steeped in ignorance. This is just an exemplification of that fatal distrust of national virtue which is the fundamental idea of centralization. This is as though parental affection and responsibility had no recognition, and charity no existence. We cannot too carefully bear in mind that the delusion and snare most dangerous to our public men, as well as to others, is trust in law for the accomplishment of moral objects. Had there never been any charity by law in this country, charity by love would have both had less to do, and done her office with greater alacrity. The law has both augmented human want, and it has enfeebled human sympathy.

But voluntarism, which springs from the most sacred regard to the highest instincts of our nature, dwells not in repose; her legitimate and only possible sphere is action: while anything remains to be done or improved her energies are taxed to the utmost. And when some point us to Russia, we in return point back, with pride, to England. There you see a system that refines but incapacitates: here you behold the force of a spontaneous willinghood, and the triumphant working of a deep sense of personal responsibility, that results in a vitality and perpetuity in England, to which the other people of Europe are utter strangers. The manner in which Nelson's famous watchword thrilled through the fleet, and wrought the victory of Trafalgar, is fresh in every mind, and always will be. What magical influence had those words? Just this. They were the simple efficient embodiment of the genius that had nursed and inspired England from the dawn of Christianity. The word "duty" occurs never-endingly in the despatches of Wellington. It is never to be found in those of Napoleon and his generals! What know the Russian serfs and the Austrian noblesse of duty? It is just this knowledge of, and obedience to the claims of this duty, that has created and now preserves our national character. We are constrained from within, not compelled from without.

Well, Duty comes to us now, and says—

"What has been done merits commendation; still, more is required. The habits and occupation of the working classes of this country are so changed as to render necessary the modification of existing modes of popular instruction, so as to suit present requirements. The excessive demand for child-labour diminishes the school age. By far the majority of children are in the fields or the mills at eight years of age. And although this seems a vexatious hinderance to benevolent schemes, yet the poor have an undoubted right to the earnings of their children. And if you have a true sense of the importance of your work, you will not rest satisfied with the calm admission of this right, but will seek some other way, better adapted to provide education to those so unfortunately circumstanced. From this necessity to employ child-labour sprang adult evening schools; and the progressive training thus ensured should be followed up and completed by the establishment of Village Libraries and Reading Rooms."

With many thanks to Mrs. Duty for her suggestion, let us talk a little about the project.

A well-known political economist, distinguished for the plainness of his style, once said, "There is a place to which day-labourers would much rather go after their labour is over than to school, and that is—to bed." Some may be of the same opinion still, but for the most part it is an antiquated notion, for it is now less customary to treat men and women as mere pieces of mechanism, having but two conditions—work and rest. While there are few, on the one hand, who would defend such a system of entire enslavement of body and mind, there are, on the other, lamentably few willing to give a proper direction to its occupation when granted.

If we educate in the schools, we must prepare for the consequences and results of such education. Boys and girls are taught to read and write. Why? That they may use their acquisitions only for the benefit of employers? or for their own improvement and recreation? or that they may exhibit the danger involved in the old adage, "A little knowledge is a dangerous thing"? The means of the workman, as they will not admit of his securing without benevolent aid the benefits of instruction at an early age, so without a continuance of the same aid he can make no material advance during manhood. It must be true that the middle and higher classes, who owe to the labouring poor the means of wealth, leisure, and knowledge, ought to pay back to them not only the wage of labour—that bare subsistence money—but that priceless possession, of which labour tends to deprive them. The necessities of the poor should not be our stock in trade! And if we want business maxims, I think these are safe ones: "*Humanity, like honesty, is the best policy.*" "*Liberality is the truest economy.*" If these are understood to teach that men may pay a certain sum of money as the commutation for all the duties they owe to the State and their fellow-men, they have been wrongly construed.

On every hand one hears public-houses loudly decried. They undoubtedly are very great public nuisances; but before we can succeed in subverting them, we must, in their place, be prepared to substitute something better. Men are gregarious animals. They are endowed with an undeniable taste for association. And where their meeting is attended with the pleasantest results there they will most congregate. The Tom-and-jerry, the Inn tap, the Bar, the Gin-palace—all present special attractions. The caterers to this taste first had to rival and supersede home—very generally a by no means difficult task—and then to rival and supersede each other. Thousands are drawn to these places by a love of conversation, or because of the access they there obtain to newspapers, magazines, and books, now frequently laid upon their tables by publicans, who thus wisely recognize the great demand for intellectual stimulus that characterises this age. These men drink merely because they are there, and cannot avail themselves of the mental resources provided without taking "something for the good of the house." Now, in supposing that a reading room well warmed and lighted would present superior attractions to the public-house for such characters, we are not, I think, begging the question.

The Hants and Wilts Educational Society has been, I believe, the first to move in this new direction. The secretary has published a brief account of the working of a few of these institutions.

He draws attention, first of all, to a village on the verge of Salisbury Plain, six miles distant from a town, with a population of 800. "So warm an interest did the population take in it," says he, "as well the farmers as the labourers, when proposed to them by a zealous and benevolent individual, that in the course of last year more than £100 has been raised to enlarge the schoolroom and provide fitting accommodation for lectures and reading-room;" and a sufficient sum has been raised to start with a library of 230 volumes of books. It numbers 32 subscribers at 10s, or 6s. annually; 31 at 6d. monthly; 16 at 2d. monthly. Through the kindness of the squire and the activity of the officers, the daily and county papers are taken in.

Secondly, he mentions an institution of more than three years' standing, whose library contains 620 volumes. Here there are 5 subscribers at 10s. annually; 45 at 1s. quarterly; 23 at 1d. monthly, to the library only. The *Times, Illustrated News*, and several magazines and other papers are taken. "The balance of the session in 1853-4 was £1 3s. 6d., after making an addition of 80 volumes to the library."

Thirdly, he mentions a small rural town with a population of 1,911. The association is in its second quarter. It numbers 18 subscribers at £5 annually; 11 at £1 annually; 42 at 2s. 6d. quarterly; 27 at 1s. quarterly; 5 at 2d. weekly; 121 at 1d. weekly.

These instances should set us at rest upon the question of expense, I think. When one comes to consider, we see that what are likely to be the chief expenses are easily dealt with. The room is a trifling difficulty, though, together with the books, the greatest. Fuel and lights involve a certain expense, though varying. County and daily papers, as they would only be wanted after the hours of labour, could be procured gratis, loaned, or obtained at half price. Large numbers of books would in all cases be presented. If the current expenses were not, however, defrayed by subscriptions of members, they might be by the fund obtained from lecturing.

It seems feasible, too, that all *the counties should unite for educational purposes*, one or two forming an Union; and that there should be village associations in districts for the delivering of lectures, on the principle of mutual assistance. Each village might supply a lecturer prepared to give a lecture on some agreed subject before the different associations in the district, and receive those of the other lecturers in return. Thus a lecture might be secured monthly during the winter, affording variety, and imparting life to the association.

Lectures, like other good things, are not without their abuse. They should be better adapted than they often are to the audiences before whom they are delivered; and they should be regarded more as provoking inquiry than as satisfying it. There are numberless subjects which, treated in a simple conversational style, could not but be beneficially displayed. The range we possess is as extensive as the works in nature, to make men familiar with which should be our one grand aim.

With respect to the library, the people should be able to take the books home with them, if they please. Home is, I know, oftentimes an unfavourable place for reading, especially when the house is small and crowded; but in many cases it is very snug, and men will enjoy the opportunity afforded by a lending library of spending their evenings intelligently and happily with their children. At all events, as we seek their interests, we must avoid adopting any course that will alienate them from their homes, the sanctity and peculiar blessings of which, the poor should be rather taught to prize, than to undervalue and relinquish. In all our social amendments we must be careful never to disturb the roots of those domestic virtues and affections that prove at once the strength and beauty of the British character.

But it may be thought that the books thus lent will be lost and misused. Mr. Charles Reed, in an exceedingly clever pamphlet, entitled, "Why not a Free Public Library and Museum in the City of London, established without Taxation?" furnishes some valuable facts to show that the loss and damage upon a system of book-lending would be very inconsiderable; indeed, if a proper mode of lending be adopted, it need not occur at all. I quote from this pamphlet the following opinions:—M. Guizot says, "It is desirable that books of public libraries should be lent out. There has been loss from the practice; but the loss has been occasioned much more by specific defect in the mode of lending the books than by the practice of lending itself. I think an occasional loss of books a very reasonable tax to pay for the general use of books." M. Van de Weyer says, "In Ghent, out of 600 volumes lent *no book was lost;* the books were not torn or dirtied. If lending be confined to those books which can be easily replaced, the inconvenience is small." Mr. H. Stevens, of America, says, "Three or four volumes are lent if required. The persons who borrow books from the town libraries are to a great extent of the working classes, who spend much time of their leisure in reading." "In Manchester, out of 70,000 volumes lent, only one was lost." To this last fact Mr. Reed appends the following note: "I copied last autumn the following notice posted on a door of the Manchester Exchange (*Subscription)* News Room:—'This room is closed, owing to the large numbers of papers *stolen* from the institution.'"

May we not reasonably hope that these lending libraries will but tend to deepen and intensify the associations of home in those whose affections naturally cluster about the walls of their clay tenements; while to those in whom a vagrant disposition, imparted by nature, developed by habit, and encouraged by a slovenly wife, predominates, and who now have no alternative between home and the public-house, the reading-room will offer a friendly refuge.

We have already pointed out the danger that exists to a country where great gaps occur between the classes of its people. Such institutions as these would aid in making the steps or grades in the social scale more natural and easy. The farmers would, in numberless instances, make use of the news-rooms, and would so come into close contact with the labourers of the village upon a different, if not an equal footing: and a means of intercourse is thus established through the agency of intelligence that is equally beneficial to rich and poor. And, further, if the requirement for skilled labour increases, surely the fact of membership with this association will prove no indifferent advertisement to a working man.

The tendency of the age is to lessen toil, and diminish the number of hours requisite to ensure animal support, &c. It is possible that the rising generation of the poor may have leisure, without detriment to their pecuniary interests. The blacksmiths of Birmingham can now earn sufficient during the latter part of the week to keep them in a state of intoxication the three first days of the week. What a dreadful spectacle would our country present, were all our industrial classes thus cursed with what should prove a blessing! It is impossible, with such an instance as this before one, not to anticipate the general relaxation from toil with much *fear* as well as hope. That this great boon, which our Creator has designed to give us through the ingenuity of man, be not lost to us, we must, looking forward to probable consequences, prepare the artizan and the agricultural labourer for its right use.

This is a work that cannot be executed by listless functionaries, but by large-souled philanthropists. Nor do I here wish to be misunderstood. I deprecate a lax liberality. The wealthy should never forget that the best economic gift to the lower orders is self-respect and self-dependence. He who is really a benefactor will work out this lesson amongst the poor—that their own resources are the best securities against want, and that they themselves may be their own best benefactors. A little help and a little guidance will, in fact, make them the most effective instruments of their own amelioration.

"The system that could raise a penny a-week from each family," says Dr. Chalmers, "would, of its own unaided self, both erect and perpetuate a sufficient apparatus for schooling, over the whole empire, or over any part of it into which it was introduced, in about twelve years."

Because the poor cannot do everything, this is no reason why we should thrust them aside, saying, "Then—you shall do nothing. We will provide what we think best; and, as we provide it, you can expect to have no voice in the matter." Such conduct breeds suspicion; and they think that we have our own private ends to answer in thus befriending them, and not their true interests at heart—which indeed is, in many cases, a shrewd guess enough.

But here is an institution for the benefit of the working man, in which he is directly asked to co-operate. This co-operation has been most readily accorded in many districts; and I do not see why it should not in all. I have reason to think that a meeting called, or a lecture given, upon the subject of libraries and reading-rooms, in our villages and rural towns, would be the only necessary, and the most effectual, advertisement of the design. They would spring up here and there, on every hand, their spontaniety furnishing the best evidence of their need, and the best guarantee for their permanence.

As we are sincere patriots, so we must utterly despair of promoting any true progress, save through the medium of greater worth in the character of individuals, and a greater number of such individuals in the country. And, to this end, can we do better than strive to organize such rural associations as I have advocated? Here is a work in which all may engage.

These remarks I leave with you, my readers, reminding you that great moral and economical changes are not the achievement of a single arm, but of many.

HOWARD REED.

Gedney Marsh, June.

PROFESSOR WAY'S NEW SCHEDULE.

Two topics brought before the Weekly Council Meeting of the Royal Agricultural Society on the 11th June are deserving of notice. The first, the new schedule of charges adopted by the Society for analyses and professional opinions to be made by Professor Way, its consulting chemist; and the second, "St. John's Bread," or a sample of the dried fruit of the Algaroba bean or Carob tree, imported by Mr. Melladew as food for stock.

With regard to the former, a low schedule of charges has not only a tendency to encourage chemical investigation, but also to procure additional members for the Society; while an increase of members and chemical analyses is calculated to reduce expenses in the laboratory. In this respect the professional labours of the consulting chemist of the Society are no exception to the common rule; systematic organization and subdivision of labour producing the greatest results.

The commendable course, therefore, is straightforward and plain; for every landowner ought to analyze the different kinds of soil, water, &c., upon his estate, engrossing the analyses in a book, in a tabulated form, for the sake of easy reference; and every tenant his artificial manures, &c., to test their value and genuineness.

Many examples might be quoted in proof of these. In support of the latter we have only to refer to the immense number of analyses of guano, superphosphate, &c., mentioned by Professor Way in his annual report, as sufficient to show the high value farmers are beginning to place upon practical investigation of this kind; while it may be safely affirmed that the day is not far distant when no landlord will think of letting a farm to a new tenant until he has first satisfied him as to its geology, mineralogy, and chemical analyses; for we could point out several cases, where the truth of this has already been realized, the most promising candidates declining to offer for farms in the market until the different soils upon them had been analyzed; thus subjecting landlords to choose between two alternatives, both of which are more expensive than the charges for analyses at issue.

And besides this view of the question, how can any landowner know the real value of his land without first having ascertained its geology, mineralogy, and chemistry? A not very uninteresting example in support of this may be thus quoted.

About eleven years ago we were called upon by a noble Duke to give a professional opinion of the quality of his Grace's park-farm and park in the presence of his agent and bailiff. The agent had been some ten years in office, the bailiff forty-six, and both were loud in their condemnation of the soil, as a cold clay—one of the most unproductive in the kingdom; in short, never place had a worse name—its only qualification being to swallow lots of the Duke's money, thanklessly returning little for it! Around us, in the park, rushes were growing in abundance, as if to rivet the conclusions of the steward in our mind—making our task rather a delicate one. Fortunately, a labourer with a spade was working close by, whom we requested to be allowed to dig a pit as the more practical way of arriving at a satisfactory solution. The soundness of this was appreciated on both sides; and scarcely had the man put his spade into the virgin soil, when up turned the chalk-subsoil as white as his shirt! "Who would have thought that?" exclaimed the agent. "Oh!" answered his bailiff, in the broad and sonorous accent of his native county—Berwickshire—"I knew that well enough; but dig here," as he put the spur to his old nag, leading us with a majestic air of triumph to a different part of the park, much to the amusement of his Grace, who appeared to enjoy very much the experimental system of philosophy we had somewhat abruptly introduced, without undervaluing in the slightest degree the official deductions of the old school. Accordingly, another pit was dug, and no chalk found—a result which crowned the bailiff with fresh laurels. As a pump was very much wanted in this part of the park, we suggested the sinking of one, as there was obviously a bed of gravel or sand at no great depth, full of water, the cause of the rushes. Our proposal was carried into effect without delay, and a deep bed of fine sand found full of water, with only a thin bed of clay over it.

Now in this example we have both geology and mineralogy; and, with a very little chemistry, we have no doubt the noble Duke would find in his demesne the elements of one of the richest soils in the kingdom, all that was necessary to effect the change being only the judicious mixture of soils, with, of course, the necessary amount of drainage. And we may add that, in riding over his Grace's estates, many similar cases came under notice.

The query, therefore, is, How many examples of this kind are there in the kingdom? and the satisfactory way of solution is, obviously, to refer each case individually to experiment. Dig and analyze; for, as landlords become impressed with the true importance of chemical analysis in the laboratory, this is the practical course they will pursue. According to the old adage, the proper mixture of soils "is buying land;" and many an estate could be doubled in value, at no great expense, by such means.

THE CAROB-BEAN: A NEW FOOD FOR CATTLE.

The algaroba bean, or carob-tree *(Ceratonia siliqua;* in Greek, Κερατια), the fruit of which is sometimes termed "St. John's bread," at other times "locusts," "sweet pod," &c., is a very remarkable plant, growing abundantly in the south of Europe, and, indeed, in all the islands of the Mediterranean, and the countries skirting the shores of that sea. In Malta, it is said to be the only tree indigenous to the soil, its dark green foliage relieving the eye from the irksome monotony of the white stone inclosures which everywhere abound, and appears originally to have given the island its name. In all the countries where it grows wild, its fruit is eaten by the inhabitants. In a dried state, it is also largely consumed by horses. In this state, full-sized pods measure from four to five inches in length, about one inch in breadth, and three-eighths of an inch in thickness. When ripe, the pods are round, plump, and contain a sweet, nutritious pulp.

In medicine, its pulp, like that of the tamarind, is slightly purgative. In the form of a decoction, it is also exhibited as a pectoral in asthmatic complaints and coughs.

We have seen no chemical analysis of the carob bean; but it is said to contain about "fifty per cent. of sugar and gum, besides a large proportion of oily matter." This would point to its being used to most advantage for mixing with other food, so as "to season it," giving it a flavour, and inducing stock to eat more largely. In the generality of cases it would appear better adapted as food for milch cows than fattening stock, especially those disposed to run to fat, where sour food does not agree with their stomachs. A little may also be profitably mixed with the dry food of horses, in a pounded state; but from its purgative nature it is probably not so suitable for sheep, although they are extremely fond of it. In all these cases, however, experiment must be left to settle its value, whether as food for horses, cattle, sheep, or pigs.

At present we ought to thank the Great Exhibition at Paris for bringing it into fresh notice; it being there largely exhibited by Spain and several other southern states of Europe, from which a plentiful supply could no doubt be had. Where grown the dried pods cost something under £3 per ton, and in London sell at about £8 10s.

With regard to the many names which it has acquired, it is said to have obtained that of "St. John's bread," from its being supposed to be the fruit of the tree which yielded the wild honey eaten by St. John in the wilderness. Metaphorically, the two words *μέλι ἄγριον*—translated, *wild honey*—may have meant, in the figurative language of the East, the carob-bean, from its mellifluous smell and sweetness resembling that of honey, and have been eaten along with the locusts; or carob-beans, locusts, and honey may have more probably been the food referred to.

The term "locust," used by Mr. Melladew and others, in London, is obviously a misnomer, and therefore ought not to be used; for locusts were permitted by Divine law (Lev. xi. 21, 22) to be eaten, and were so by the Jews; while in no case does, or can, the word *ἀκρίδας*—translated *locusts*—mean the fruit of a tree. This gentleman, however, in his letter to the Council, is quite right with regard to the "husks which the swine did eat," referred to in the parable of the Prodigal Son; for the words *ὑπο τῶν κερατίων*—translated "*with the husks*"—ought obviously to have been rendered *with carobas, or carob-beans*, meaning with the fruit of the carob-tree, which was used as food for swine, according to Columella, who may be said to have been cotemporaneous with St. John the Baptist—*κερατιων* being the genitive of the Greek name (*κερατια*) of the plant *Ceratonia siliqua*, and not with the husks of the fruit, as translated. In short, husks is not the proper English name for the unshelled bean as given to swine, and as now imported.

"There is something in a name," it is said, and perhaps the best designation for this new edible will be *Carob-bean*. The practical question at issue is to give it a fair trial as food for our different kinds of stock, mixing it in all the various ways which circumstances may dictate. In many cases, it may be given medicinally alone. It would also be desirable to have a more perfect analysis of it, as from its taste and smell it probably contains an aroma and tonic peculiar to itself, less or more affected in quality by season, climate, and management. Pliny tells us it grew abundantly in Syria in his time, and doubtless also it will be found equally plentiful throughout the whole of Asia Minor. Whether is the European or Asiatic the richest in quality? Is its sugar grape-sugar or cane-sugar? These and many other questions demand a chemical solution.

WHEAT IN TWO-FEET ROWS.

Sir,—It gives us great pleasure to observe a paragraph headed "Rotation of crops," by Mr. J. M. Goodiff, whose views are so coincident with our own. We cannot but think, however, that he ought to have given us some credit for the introduction of planting corn in rows two feet apart, as we claim to be the first who introduced it in a practical point of view. We have several acres this year on the same plan, worked well between with the fork on common stetched land during the winter months, which are now progressing favourably from a small quantity of seed. We have also one acre of wheat thus treated, which is sown with lucerne and doing well. Mr. Goodiff is unmistakably on the right scent, and (as he observes), "let but the work be done well," and success is certain. We have this season about 40 acres, on various fields and soils, at less than half the usual number of rows on a stetch, and some at less than a quarter the ordinary quantity of seed per acre, which are progressing favourably. An eminent agriculturist in noticing it observed—"Mr. Hardy, you ought, and you will no doubt, by this process insure every plant to produce some ten or a dozen fine ears, whilst we farmers of the old school from our two or three bushels of seed obtain at least but a produce of two weak ears from each grain, or about 50-fold." Our answer was that we very much doubted if they ever obtained even half that amount, viz., 50 bushels per acre from such a proceeding. We also observed that we should be well satisfied to reap two good ears from each plant of our own half-bushel planted, say 100-fold, or 50 bushels, though we expect more, and surprised him when we reminded him, and he himself became thoughtful, that were it possible to obtain half as much even as this from their two bushels (say no more, though many use it), it would amount to 200 bushels produce per acre, which clearly showed the error in sowing thus much seed.

The following is the purport of a contemporary's observations, which are coincident with our own on this important subject of "thin seeding":—"The interesting phenomenon of vegetation drawing towards the light has often been exemplified amongst potatoes stored in a dark cellar; a shoot from one of them will often make its way across a floor of many feet in breadth, and rise up the door towards the keyhole where a ray of sunshine appears. Roots will also travel long distances in search of food, and having discovered a spot where nourishment for the parent plant is deposited, they will multiply their fibres in hundreds. The attraction which induces this beautiful natural appearance is not fully understood, as the roots have frequently to pass through a comparatively barren portion of the soil previous to reaching the desired point. The study of physiology may in the course of time elucidate the mystery; but at present the knowledge of the fact must satisfy agriculturists and horticulturists, and will be sufficient for their guidance and instruction, proving the advantage of deep stirring in order to give full development to the root progress. It does not seem reasonable to suppose that because land is poor, wheat should be sown thickly to ensure a crop. The more sensible course would be to limit the supply of seed to the capability of the land to support its growth in all stages; it being always understood that allowance must be made for casualties, viz., destruction by birds and insects; but not for careless farming. The wonderful paths of the tender roots through masses of soil, almost impenetrable to the steel fork, excite astonishment, and raise the thoughts of man 'to Him who maketh the grass to grow upon the mountains.' Experiments have shown that the roots of the wheat plants themselves 'tiller out' in an extraordinary manner under favourable circumstances; these facts are in favour of giving the crop room enough to display its vigorous powers of production. It may therefore be fairly suggested to the farmer to use his discretion in sowing according to the quality of the land he cultivates, always remembering that two heads of wheat or other grain will not come to perfection where the natural soil has only provided for one; and that if he requires to increase the yield, he must bring draining, labour, manure, and intelligence to bear upon the question. Attempts to introduce improvements in agriculture will often meet with strenuous opposition from prejudice, strengthened by the habit of following in the jog-trot path of the '*good old times*,' when farmers having a monopoly could afford to let weeds have a fair chance with their crops. The markets have lately been high, but the days are coming which will enable them to compete with the foreigner. It will, therefore, never pay either to smother weeds with wheat, or wheat with weeds."

HARDY AND SON, Seed Growers,
Maldon, Essex.

June 3, 1856.

THE DUKE OF NORTHUMBERLAND AND HIS TENANTRY.

The presentation to Mr. Wetherell, late a tenant of the Duke of Northumberland, which arose out of circumstances well known to the public, and which consisted of a silver vase and £400, was made at a public dinner in Richmond, Yorkshire, on Saturday, June 7. The company included representatives from other counties.

Mr. T. P. Outhwaite presided, and gave the usual toasts; after which,

The CHAIRMAN rose, and said: I now rise to perform a most important duty—one which I wish had fallen into more able hands, that justice might be done to it. I need scarcely say we are met for the express purpose of presenting to Mr. Wetherell a testimonial for the indefatigable and able manner in which he has supported the interests of the tenant-farmers of England (Hear, hear). I have, in general, a great aversion to assist in any movement that may tend to be hurtful to the feelings of any party; but in this instance I feel proud of having been one of the committee selected to show the public estimation for Mr. Wetherell, and also to show the Duke of Northumberland that the conditions offered to the tenants of the Stanwick estate are not to be tolerated by the tenant-farmers of this country (cheers). We were told a few years ago, by a noble lord then holding a high position in the cabinet, that farmers' heads were as heavy as the clods they cultivated; and certainly, had these conditions been accepted, we should have justly deserved the compliment the noble lord was pleased to pay us (Hear, hear). Probably, half a century ago, the despotic manner in which the Duke and his advisers have attempted to treat tenant-farmers might have been allowed to pass unnoticed; but I am glad to say that we live in an age when our brethren will not be allowed to be crushed by arbitrary restrictions without a free-speaking of our minds on the subject (Hear). I dare say that some parties suppose that this testimonial has been got up entirely by personal friends of Mr. Wetherell; but that is not the case. Several hundred subscriptions have been received from parties who have no knowledge of Mr. Wetherell except in connection with this agreement, and certainly every one who has the slightest spark of fellow-feeling about him must sympathize with him in the matter (Hear, hear). The principle of the agreement, I believe, the public at large look upon as unfair and wrong. Upon referring to the list of subscribers, I find that upwards of 300 are from the district of Peterborough alone, others from Cambridge and Bedford; also a large number from Lancashire, the west of England, and various parts of the three kingdoms—England, Ireland, and Scotland (applause). The gentlemen from those distant parts, who have supported the cause, had no idea of the manner in which Mr. Wetherell was induced to enter on his farm. They had no idea that Mr. Moore was commissioned by the Duke to invite Mr. Wetherell to take the farm, which was then in wretched condition, though under the management of the Duke himself and his agents for several years before (Hear, hear). It is impossible I can enter into details of what took place; but this I know, that Mr. Wetherell was assured by Mr. Moore that if he would have the place no rules should be laid down for his guidance (Hear, hear). Influenced by this persuasion Mr. Wetherell took the farm, and there he resided for eight years; yet, after laying out considerable capital to put the place in creditable condition, after the £30 prize had been awarded to him in August last for the best-managed farm on the Stanwick estate, he is all but driven from the place, and not allowed to remain on the farm on the same conditions as other tenants (Hear, hear, and "Shame!") I am glad the Duke has seen fit to withdraw the agreement, and is about to offer another, which, from what I can learn, no reasonable person can object to. It has been announced by Mr. Clarke, on the authority of Mr. Moore, that if the agreement about to be offered to the tenantry should not be to their satisfaction, they would not be required to sign it; but Mr. Wetherell was not to know that any alteration had been made until his farm was let (Hear, hear). Gentlemen, we thought that to allow such proceedings to pass unnoticed would be the means of staying the progress of agricultural improvement. Now, sir (addressing Mr. Wetherell), it is to you that we, as representing the tenant-farmers of the United Kingdom, consider ourselves indebted for the straightforward, manly way in which you have acted; and we regret that the Duke of Northumberland and his advisers have not pursued towards you the same upright course (applause). We are aware that you have sunk considerable capital in improvements, and that you are now prevented reaping any benefit from the unexhausted capital left in the farm. I am glad to tell you, now, that upwards of three thousand subscribers—three thousand agriculturists, I may say—have placed at my disposal this very handsome vase (pointing to the testimonial), of which I ask your acceptance (applause). It bears the following inscription:—"Presented to Mr. William Wetherell, along with a purse of 400 sovereigns, by nearly 3,000 subscribers from all parts of Great Britain, for his manly and independent conduct in advocating the right of farmers to equitable agreements with their landlords, and more particularly for sacrificing his farm at Kirkbridge, rather than sign an unfair and oppressive agreement proposed to him by the Duke of Northumberland" (loud cheers). I hope, sir, this will be handed down to your posterity for many generations, and that by the tenour of this inscription they will be encouraged to pursue the same upright and honourable line of conduct (Hear, hear). I have further the pleasure of asking you to accept a purse containing upwards of 400 sovereigns; and the knowledge that you have left considerable capital in the farm at Kirkbridge, for which the Duke and his agents have offered you no compensation, must be our excuse for the steps we have taken (Hear, hear). I have again to ask you to accept this handsome vase and purse of gold, and hope you will live many years to enjoy the confidence of the agricultural community of the kingdom (loud cheers).

The health of Mr. Wetherell was then drunk with great enthusiasm.

Mr. WETHERELL, who was received with renewed cheering, said: I rise on this occasion with some regret, seeing that the number of friends present is so small; but at the same time I know that a large proportion of the subscribers live at a great distance, and this is a sufficient reason for their absence (Hear). I am quite sure it is only the distance that has kept them away (applause). To you, Mr. President, for the genuine sympathy you have always shown me in this unpleasant and unfortunate affair, and more particularly for the kind expressions with which you have made this presentation to-day, I beg to return my sincere thanks. I have no idea that this handsome testimonial is presented to me as a private individual; but rather as representing the interests of the tenant-farmers, and for resisting what might on future occasions have been extremely inimical to their welfare (applause). Although I shall suffer most seriously by the loss of capital sunk in the farm, yet I do not in the slightest degree regret having done what in my conscience I believe was only just to myself (Hear, hear). I have made up my mind that I did what I ought, and I leave the matter in the hands of the public to judge between my landlord and myself how far I was right or wrong (applause). Now, gentlemen, I will not trouble you further with remarks of this sort; but, as briefly as I can explain to you the exact conditions under which I became the tenant of the Duke of Northumberland. As far back as 1847 I was met by Mr. Moore, the agent, at the house of a friend. He called me into another room, and said, "Wetherell, I have come, desired by the Duke of Northumberland, to offer you Kirkbridge. It is an exceedingly good farm, and the rent low. We want a tenant who will manage this farm in such a way as to be a model for all the tenantry on the estate, and the Duke has sent me to you" (Hear, hear). I said I did not sufficiently know the place, but I would on the following Tuesday go to look at it. I was there to the hour, and was told we had to be with the Duke at two o'clock. We had not a moment got out of the house when he told me, "We are going to erect a new set of farm-buildings from one end of this place to the other;" and not twenty yards farther he again stopped me, and said, "I must tell you that you must be a yearly tenant; you cannot have a lease of the place. I am intending to put the whole of the tenantry on leases and agreements; but you are to be a tenant to manage the farm entirely as you like." We went over the farm, and I observed that there was little ploughing land for the place, but that the field we were in should be laid down to grass. He said, "If you will lay this down to grass, you shall plough another." He then hurried me into the presence of the Duke, who first asked me very courteously how I was—for I had the honour of being previously known to his Grace—and then asked if I liked the farm. I said I did, but that if the same quantity of game was to be continued I would not have it rent free. His Grace gave me his word that I should have no cause to complain about the game, and asked what other requests I had to make. I said Mr. Moore had informed me that a new set of buildings was to be put up, and then, to cut the thing short, the Duke said I had better make arrangements with Mr. Moore, and that he was glad I liked the farm. I entered on the farm. The Duke said he did not intend that I was to send any part of my family; but as I could not come at the May term my son and daughter went before me. As soon as possible I came, and then told Mr. Moore I thought he had seen sufficient of the intelligence and industry of my son to know whether he was a person that would answer as a tenant. He said he wanted no better, and at my request asked the Duke to release me that I might resume my business at Durham, and allow my son to remain. The Duke said, "No, I want old Mr. Wetherell; I have taken a fancy to him, and cannot allow him to leave." (Hear, hear.) I name these circumstances only to show the reasons why I left a business at Durham of greater value than the farm, in addition to the consideration that I was getting old, that I was anxious for my son's benefit, and was also fond of farming myself. It does appear to me to be a great hardship not to allow me to go back at that time, and afterwards to require me to sign this agreement, or to walk about my business. (Hear, hear.) This was how I came to be the tenant of Kirkbridge, and after coming I can conscientiously assure you that farming the place for the greatest possible profit was a consideration that never occurred to me or to my son. It was our daily anxiety to improve the place as far as money could do it, and to oblige and please the Duke. In this I believe we succeeded, of which the letter written to me on the 15th of August by the Duke of Northumberland will be sufficient evidence. (Hear, hear.) It has certainly occurred to me that if his Grace had kindly condescended and stooped to do me justice, viz., to have granted me such a lease or agreement as would have been just to any tenant, it would have added dignity to his name, and left me upon the place. (Applause.) Gentlemen, for all your kindness I feel deeply obliged. (Great applause).

Mr W. Harrison (Kirkbank) next gave "The Landlords."

Mr. Barber (Catterick) then said: I have the honour to propose for your acceptance on the present occasion a toast, second in importance only to the toast of the day, "The health of the Tenant-farmers" (applause). They are a class to whom the proceedings of this day are deeply interesting; and although the circumstances of Mr. Wetherell's withdrawal from the Stanwick estate are familiar to every agriculturist, and although the leading points have been placed before you by our chairman with his usual judgment and discretion—and also, permit me to add, with an earnestness which does credit to his sympathy with a brother agriculturist—yet I think I should be doing an injustice to the class whose health I have the honour to propose, were I to confine myself to general observations, and to refrain entirely from referring to the case of Mr. Wetherell in particular. His position to-day may be that of any other tenant-farmer in this neighbourhood in a few months. If the landed proprietors of this country are to be suffered to introduce agreements drawn up either on the impulse of the moment or to gratify some private crotchets of their agents—if the tenant-farmers are to be annually exposed to the danger of a discharge, or the alternative of signing conditions which they know at the time they sign it is impossible for them to fulfil—(Hear)—conditions which are at the best but a premium for hypocrisy and an insult to their understanding, seeing that the agent himself (Mr. Moore) declared that they were never intended to be put into execution—(Hear, hear)—then it is quite time annual tenure should cease, or that some arrangement should be introduced whereby the interest of the tenant may be secured to him, as well as the rent of the farm to the landlord. (Hear, hear.) The relative position of landlord and tenant is just this: The landlord has a quantity of land to let; the tenant has a certain amount of capital at his disposal, which, from the fact of his being ignorant of other branches of industry, or partially so, he is in some measure compelled to invest in transactions connected with the cultivation of land. This capital is not invested in the land, you will observe, but in the produce, and it will be for the tenant to use his utmost skill, energy, and industry to secure a return of his capital with interest for its investment, and also a due reward for his personal services. I contend that the landlord has no more right to dictate the manner in which a tenant shall crop his farm, so long as he does not deteriorate the soil—(Hear, hear)—than the man who lends his money upon approved security, and regularly receives his interest, has a right to dictate to the borrower the manner in which he shall employ it (applause). The testimonial before us is the spontaneous offering of nearly 3,000 subscribers, who thereby declare not alone their approval of Mr. Wetherell's conduct, but their disapprobation of any agreement which does not give to the tenant-farmer liberty of action as security of capital. Deprive him of his political freedom if you will—exercise your influence to change his religious creed if you will—make his civil and religious existence subservient to your own political views or private aggrandisement if you will—but, O, ye landlords of England, seek not to coerce that spirit of inquiry and improvement which is the lever of the agricultural world (applause). If ye do, then as surely as I stand here this day, the younger and more intelligent tenant-farmers of this country will make themselves a home in another and a happier clime, where their intelligence will be respected and their industry rewarded (applause). But, gentlemen, I refrain. I hope, I trust, I believe, that the discussions to which the introduction of this agreement has given rise will be of great value both to landlords and tenants, will teach them both to bear and forbear, and mutually to respect the opinions of each other. Then as years roll by, and as Mr. Wetherell continues to gaze upon that vase, he will feel that his residence at Kirkbridge has not been in vain (cheers). Not in vain, if by his example while resident there he has encouraged the tenant farmers to take advantage of those means which men of science and of mechanical skill have placed at their disposal. Not in vain, if by his refusal to sign this agreement the landlords of this country may be at length convinced that their duty is to encourage the development of the intellect, the scientific researches, and the political freedom of "The tenant farmers" (loud applause).

Mr. J. Outhwaite, in responding, cordially thanked Mr. Barber for his boldness and manly conduct in thus stating to the great and small landlords what was their duty towards the tenantry of this country.

Capt. Harland said he had to propose a toast which carried with it its own recommendation; therefore, without any lengthened eulogium, he would at once give the health of the Chairman—a distinguished agriculturist, a kind neighbour and friend, and an excellent and honest man (applause).

The Chairman briefly responded.

Mr. R. Kay said the next toast had been allotted to him—the health of a gentleman with whom they were all pretty well acquainted, and whom they were glad to see occupying the vice-chair (applause).

The Vice-Chairman said he was much obliged for the compliment, though on leaving home he had no idea of being placed in that position. He sincerely trusted the tenant-farmers would always, like our army and navy, show a bold front against oppression, and protest against all feudalism and serfdom (applause).

Mr. J. Outhwaite next gave the health of the Honorary Secretary, Mr. Thairlwall.

Mr. Thairlwall expressed his thanks in an able speech, which we regret our limits prevent giving in full.

Mr. Wetherell next gave, "The Press."

The health of Mr. Thomas Wetherell, and some other complimentary toasts, followed, and the company broke up about eight o'clock.

NORTH LINCOLNSHIRE FARMING SECOND TO NONE.

Sir,—The *Mark Lane Express* being so famous for scientific, practical, and profitable information to farmers, I beg to send you the following statement, which will show the high and good farming on the Wolds in North Lincolnshire for some years back, by Mr. Richard Dawson, who occupied the Lordship of Withcall, four miles from Louth, which Lordship contained about 2,700 acres. He boarded and lodged in his house thirty-four ploughmen, with a suitable number of female servants; and he put yearly 1,500 long-woolled ewes to the ram as breeding stock. In December, 1838, he sold his three years' wool to Messrs. Holdsworth for £5,981 4s., consisting of 11,767 fleeces and 3,148 tods.

May 30, 1840, Mr. Dawson paid Mr. Robert Norfolk for bones for manure and linseed cake £2,111 6s. 3d., of which there were 12,000 bushels of bones, at 2s. 6d. per bush., £1,500.

In January, 1841, he paid Mr. Norfolk for bones for manure £1,562 14s. 9d. The rent at this time was £2,000, and the tithe £500 per annum. Mr. Dawson and his father laid out yearly £1,500 in bones for manure for twenty-two years in succession, besides large sums yearly for oilcake; and I saw and took a copy of the above receipts and tod bill at Mr. Dawson's house. I once counted, when Mr. Dawson, sen., was living, in a close of 352 acres of clover or seeds 1,000 ewes, with a lamb to each ewe, making together 2,000 head of sheep stock grazing with some young cattle and horses. This great close was part of an old rabbit warren of 1,000 acres when Mr. Dawson, sen., entered upon the farm. Such rabbit warrens at that time were let at 2s. 6d. per acre. The money for wool yearly appears large, and upon land a few years backs a wilderness; but when we consider that Mr. Dawson grew yearly 600 acres of turnips, and gave his feeding sheep oilcake and corn with the turnips, therefore Mr. Dawson was a great winter feeder of sheep, at the same time he grew yearly 600 acres of clover or seeds. Mr. Dawson and his father, who occupied the farm until he died, had proved that green crops were the mainstay of all good farming, and that the more meat a poor ploughed land farmer sent to Smithfield, the more corn he would be able to sell per acre at Mark Lane. Meat and wool were two great leading objects with the late Mr. Dawson. Of course his son would follow the profitable example. I need not add that Mr. Dawson had a lease of his farm; but the famous North Lincolnshire tenant-right or custom would have protected him. The North Lincolnshire tenant-right is a fine example to all the world. It is the foundation of all first-class cultivation. It has made North Lincolnshire second to none in the cultivation of poor soils.

SAMUEL ARNSBY.

No. 18, *Norfolk-street, Hyde-park, June* 3, 1856.

OXFORDSHIRE AND BANBURY AMALGAMATED AGRICULTURAL SOCIETIES.

ANNUAL SHOW.

On Tuesday, the second annual stock show of the Amalgamated Societies, with the show of implements for the prizes offered by the Banbury Agricultural Association, took place in Banbury, when there was a very good supply of stock and of implements, and a very numerous party of visitors, it being calculated that not less than 1,000 persons visited the ground during the day.

THE AWARD OF PRIZES.

CHAMPION PRIZE.—BY J. H. LANGSTON, ESQ., M.P.

For the best horned cattle in the yard, whether shown as extra stock or for competition, £7 to J. H. Langston, Esq., for a roan cow.

CATTLE.

For the best bull, not less than two years, £7 to Mr. J. Druce, Ensham. For the second-best ditto, £3 to Mr. W. Cother, Middle Aston.

For the best bull, not more than two years, £5 to Mr. H. Mann, Lighthorne. For the second-best ditto, £3 to Mr. J. Druce.

For the best cow of any age, in milk, having calved within six months of the day of exhibition, £6 to J. H. Langston, Esq., M.P. For the second-best ditto, £3 to Rev. G. Warriner, Bloxham Grove. Highly commended, Mr. W. Cother.

For the best cow, under 40 months of age, in calf or in milk, £5 to J. H. Langston, Esq., M.P. For the second-best ditto, Ditto. Commended, Clement C. Dormer, Esq., Rousham; ditto, Mr. H. Middleton, Cutslow.

For the best pair of heifers, for breeding purposes, under 18 months old, £5 to Mr. H. Middleton. For the second-best ditto, £3 to J. H. Langston, Esq., M.P.

MARES WITH COLTS.

For the best cart mare and colt, £5 to H. J. Sheldon, Esq., Brailes House. For the second-best ditto, £3 to Mr. W. Hadland, Clattercote.

SHEEP.

For the best Southdown shear hog ram, £4 to Colonel North, M.P. For the second-best ditto, £3 to Ditto.

For the best long-woolled shear hog ram, £4 to Mr. W. Cother. For the second-best ditto, £2 to Ditto. Highly commended, Mr. C. Gardner, Upper Swell.

For the best long-woolled ram, of any age, £4 to Mr. W. Cother. For the second-best ditto, £2 to Mr. C. Gardner.

For the best Down Cotswold shear hog ram, £4 to Mr. W. Gillett, sen., Southleigh. For the second-best ditto, £2 to Mr. J. Druce.

For the best Down Cotswold ram, of any age, £4 to Mr. J. Druce. For the second-best ditto, £2 to Mr. W. Gillett.

For the best pen of five breeding long-woolled shearling ewes, £3 to Mr. W. Cother. For the second-best ditto, £2 to ditto.

For the best pen of five breeding Southdown shearling ewes, £3 to his Grace the Duke of Marlborough. For the second-best ditto, £2 to Colonel North, M.P.

For the best pen of five breeding Down Cotswold shearling ewes, £3 to Mr. John Rowland, Islip. For the second-best ditto, £2 to G. H. Barnett, Esq., Glympton Park.

PIGS.

For the best boar, not less than twelve months nor more than three years old, £3 to Mr. S. Druce, Ensham.

For the best boar, not more than twelve months old, £2 to Mr. J. Marriott, Floore.

For the best sow, not more than three years old, £2 to Mr. J. K. Tombs. For the second-best ditto, £1 to Ditto.

AGRICULTURAL IMPLEMENTS.

For the best collection—1st prize, £3, Messrs. Barford and Son, Banbury; 2nd prize, £1 5s., Mr. Mascord, Banbury; 3rd prize, 15s., Mr. Joseph Gardner, Banbury.

EXTRA STOCK.

The following were commended:—Two shear hog rams, exhibited by Mr. Hobbs; and a long-woolled ram and a shearling ram, exhibited by Mr. Cother.

The judges also awarded £2 to a cheese-making apparatus, exhibited by Mr. T. H. Griffiths, of Birmingham; and £1 to W. Sawney's winnowing machine, with hariff apparatus attached, exhibited by Mr. W. Sawney, of Beverley.

THE PARIS AGRICULTURAL EXHIBITION.

The reign of the present Emperor of the French, whether we consider it merely as an eventful period, chequered with stirring and political events, or whether, soaring in the higher regions of philosophical speculations, we view it in its influence on the progress of civilization in general, and the destinies of the French people in particular, will certainly furnish the future historian with ample materials wherewith to erect an historical monument upon which posterity will gaze with gratitude and wonder.

Among those arts that most contribute to the civilization of mankind, and which Napoleon the Third has fostered with the greatest anxiety and perseverance, there is certainly none more important than agriculture. History tells us that civilization, and its bright train of refined arts, morality, religion, and social security, invariably enter as imperishable seeds into the fine furrows opened by the plough, however rude the implement; and it teaches us also that on the prosperity of agriculture hangs the fate of nations.

It is in vain that a country may have reached the very acme of affluence and glory—the power that rules it may have achieved the most salutary reforms, strengthened ancient liberties and social institutions, enacted new laws regulating the relatively equal pressure of public burthens—it may have so encouraged industry and commerce that the country it governs has become the great mart of the world—its docks may be filled with ships, its warehouses with goods, its banks with money—it may have added fresh brightness to the halo of glory already encircling the national standard—its armies may tread with a conquering step the land of their enemies, whilst its mighty fleet, propelled by an invisible power, are extending to the remotest spots of the earth the awe of their mighty and resistless armaments, together with the gentle and beneficent and civilizing sway of their rule—its artists may equal, nay, surpass, the most famous in ancient times—its poets may enchant by strains equally harmonious with those of the most gifted geniuses that ever lived; in one word, that a nation may have reached all excellences, all perfections in every branch of social pursuits and duties; but, from whatever cause it may be—and in the history of mankind the chapter of these causes is a bulky one—let the hopes of the husbandman be blasted; let his harvest perish; let the multitudes crowded in the dingy haunts of industry and commerce besiege in vain the national granaries; let the ghostly spirit of famine stalk through the land, reaping with an insatiable ferocity its own harvest of death and horrors; then one might exclaim, O civilization! where is thy glory? Industry and commerce! what avail your riches? Armies and fleets! where is your might? Virtue, religion, morality, science, genius! where is your sway?

It would be idle on our part to adduce facts to prove this proposition; history is replete with such; and the records of our times would furnish, if necessary, many a dire illustration of this truism. Taking this for granted then, it is not to be wondered at that a man like Napoleon III., who has given so many proofs of his wisdom and depth of judgment, to stir up the latent energies of the great nation he rules, and advance their prosperity, should have bestowed upon the art of agriculture, the *Alma Mater* of civilization, his most persevering attention, his most untiring efforts. It is to that solicitude we are indebted for the magnificent agricultural display we have undertaken to describe, in doing which we can assure our readers, whatever be the strength of our expressions, whatever the prolixity of our details, whatever our anxiety to record faithfully and completely that grand spectacle in all its peripeties, we have the humiliating consciousness of remaining beneath our task. Although at the time we are penning these lines we have had only a glimpse, as it were, of the general arrangements of this exhibition, yet we are enabled to give a full description of the preliminary steps that have been taken to insure its success, by facilitating the transit and agglomeration of so many animals, produce, and machinery, converging to one spot from all parts of Europe; and, taking all circumstances into consideration, the vast number to be conveyed to the various termini of the Paris railways, and thence transported to the Palace of Industry in vans and waggons—not a single animal being permitted to walk through Paris—we must say at once that for an undertaking of that magnitude, nothing could exceed the completeness and success of these arrangements.

At the various ports of disembarkation the strictest orders were given for the good reception of exhibitors and their produce, and, as far as we have heard, with the best possible effect. As to our own experience, we think it a duty on our part to testify here the high sense we entertain of the kind reception we experienced from the civic authorities at Dunkirk.

We left London in the magnificent and commodious steam-ship the City of Norwich, belonging to the North of Europe Steam Navigation Company, whom we must congratulate for having in their service ships so well adapted to the conveyance of cattle, and agents, captains, and crews so willing to serve and oblige.

We had on board a good cargo of some of the choicest specimens of cattle, contributed from our principal breeders, and many of which, we feel certain, will be honoured with prizes. Having taken the precaution of announcing our landing at Dunkirk to the authorities of the town, we had the gratification of meeting on our arrival the most pleasant of all receptions—that of expected guests. We found on the quay gentlemen appointed by the Minister of Agriculture, among whom one whose amiableness has been so fully appreciated in

England, M. Titterant, and MM. Dessurne, appointed by the sub-prefect of Dunkirk; to all of whom we beg to tender the expression of our gratitude for their unremitting attention in ministering to our wants and accommodation. Stables belonging to untenanted cavalry barracks had been prepared for us; and thither, after being safely landed, our cattle were conducted, by a numerous staff of men engaged for that purpose, protected by a body of the police, and amidst the wondering curiosity of a large portion of the inhabitants. M. Titterant having intimated to us that the Palace was not ready for our reception in Paris, we were willingly induced to extend our stay in Dunkirk, having every thing we required for the cattle most bountifully provided by the French Government.

We soon had a large accession to our numbers. The day after we landed, another large vessel belonging to the same Company brought the Scotch contribution to the Great Paris Show, consisting of 142 head of cattle and some hundreds of sheep, together with about one hundred exhibitors and attendants. Mr. Maxwell, of Edinburgh, had come over a few days previously, and, seconded by the ready kindness of the gentlemen I have already named, had made ample preparations for the lodging and feeding of so large a cargo. Both the Scotch and our quarters were constantly besieged by great crowds, anxiously peeping through the interstices of the closed doors, and whenever an opportunity occurred, eagerly rushing into the stables and gazing with kindly exclamations of wonder at the huge frames of our shorthorns. Several agricultural committees of various neighbouring towns also did us the honour of visiting us; and had it not been for the necessity of restricting the admission of so many visitors, for the object of securing rest to our animals, the barracks where we were located would have become a regular show yard.

Three days after our arrival at Dunkirk a special train was placed at our disposal, and we safely reached Paris early on Tuesday morning last, and by 12 o'clock all our stock were conveyed to the Palace in vans and waggons supplied by the French government. A great number of animals had already arrived; and from all the railway stations, waggons after waggons continued to bring fresh loads, up to Wednesday evening, by which time all the stalls were pretty well filled.

As everybody knows, this remarkable exhibition is held in the gorgeous palace lately built for the universal one that took place last year. Nothing could be better adapted for such a purpose; the whole of the central nave is turned into a beautiful garden, with lawns, masses of green shrubs, and gay flowers. Three fountains throw into the air a freshening stream of water that cools the atmosphere; rows of substantial halls are ranged at equal distances all along the side-aisles; each is provided with a manger, and at convenient distances a plentiful supply of water is at hand. Outside the building numerous sheds are erected for the reception of the pigs, sheep, poultry, and implements; and under others, vast stacks of hay and straw, and huge piles of sacks of meal are ready for distribution.

All through the immense Palace a great deal of bustling is observable; men of all climes, wearing the most extraordinary costumes, and speaking the most heterogeneous languages, are met in all directions; but it is in the evening, when the distribution of hay and meal is made, that one forms a correct idea of the confusion of tongues. Then can be seen representatives of all the German states, the Hungarians, Tyrolese, Pennsylvanians, Bulgarians, Moldavians and Wallachians, Italians, Spaniards, Scotchmen, and many of our own English farm-labourers; and as these men do not, like their masters, adopt the general fashion of dress worn by gentlemen in all European countries, they have come decked in their gayest national costumes, some of which are more strange than picturesque.

The gathering of cattle in the building is not less motley than their drovers—all sizes, all colours, all shapes are discernible; and this diversity of breeds will assuredly afford the most useful and practical trait of this Great Exhibition, by enabling the agriculturists of various nations to compare their native breeds with those of other countries, and thereby form a right judgment as to their respective merits. That England shall gain by this comparison there is not a shadow of doubt; and we are happy to state that she is worthily represented on this auspicious occasion in all the classes in which her breeds are prominently superior to those of other countries; and, from the feelings of foreign breeders, which we have already been able to test, we have no doubt but very few of the animals shown by English breeders will return to England, and that high prices will be readily paid for the prize beasts whenever their owners will part with them.

The trial of implements is laboriously going on. To give an idea of the quantity of machinery sent to the exhibition, we will mention only the number of thrashing-machines, which exceeds sixty. To test the respective merits of these implements in a satisfactory manner—that is, with justice to the exhibitors, and conscientiousness on the part of the judges—it would take a whole week alone to accomplish that task; but the report must be made by Saturday night, the 31st of May, together with that of the whole of the other kinds of implements, the number of which we are unable to give, not having yet obtained a catalogue, but which must be something like two thousand; and the task of the judges for the various classes of animals will be equally arduous. In the cattle show alone there is nearly one thousand animals.

The agricultural produce is not less well represented than implements and stock. In the immense galleries on both sides of the building, and covering the whole of the aisles where the cattle is located, a vast display of every kind of produce is arranged in beautiful order, together with the produce of those branches of industry and manufactures which are, more or less, related to agriculture.

As you look down from the galleries on the splendid garden below, which seems to have been created by the magic wand of a necromancer, the splendour of the sight, the exquisite blending of colours, so beautifully relieved by the green-sward of the lawns, and the sombre hue of evergreen shrubs, baffle description. Masses of the rarer plants, gracefully grouped, flowers of the gayest colours, tall pine-trees, cedars, palms, and other tropical productions, are most tastefully planted, some forming knolls, covered with the finest turf, and thus symbolising, by a happy and beautifully suggestive promiscuousness, the union and reciprocity that all nations, all climes, all races of men ought to foster and cultivate for the mutual advantage and happiness of all.

Each part of the world, each climate, each nation, possesses peculiar natural advantages suited to its requirements; but at the same time there is none to be found that does not lack other advantages equally necessary to the full development of its prosperity, and which are likewise the privilege of other communities differently situated, Now, all these advantages form many links of a whole. and must be brought together, that perfection may be attained; and, we say it without fear of being contradicted, this Great Exhibition will do more towards eliciting those points of contact, by means of which the various nations who have sent in specimens of their agricultural riches may be brought together in the holy alliance of progress, than any other means that could be well devised by human judgment and policy.

It is somewhat remarkable that this event should have happened so soon after the proclamation of peace, the blessings of which are thus made obvious by the beautiful Exhibition, the general features of which we have faintly endeavoured to describe. In our next communication we shall tell the share each nation has taken in this solemnity, and shall describe as minutely as possible the characteristic features of the numerous breeds of stock there assembled, and compare their respective merits, with the view of pointing out the means of improving their qualities and correcting their defects by the judicious crossing with more perfect breeds pure as our own. We enter upon this task fully impressed with its paramount importance to English agriculture. Never was there an opportunity so great, so complete in all its bearings, to establish in the broad light of an immense comparison the infinite superiority of English breeds and produce. Already several publicists, economists, and writers of various merits, had statistically proved that superiority; but it was in books alone, which are read only by the few. The millions have now opened before them, under the crystal vault of a splendid palace, in the midst of the metropolis of the civilized world, a book, worded in facts, every page of which records in unmistakeable characters the greatness of English agriculture, and the glorious triumph of the skilful enterprise of the English farmer.

Paris, May 30.

The much-vexed question of over-fattening in breeding cattle has been again agitated here in such a manner as will fail, we are certain, to bring it to a satisfactory conclusion. Our readers are aware that one of the rules in the programme of this Exhibition was, that all animals found too fat by the judges would be thereby disqualified from competing for prizes. So far so good; but how are the breeders to know the point of condition to which they must stop? How are the judges to draw the line with that nicety which justice demands? If rumour be true, some of our most renowned breeders have just seen their best animals disqualified for over-fatness. If so, it is due to them, due to the public in England, that the judges should publicly state the rules by which they were guided. In the absence of authenticated information, we feel it a duty to abstain for the present from any more pointed remarks; but before this article is closed we hope to be able to publish a list of the prizes, which has hitherto been studiously withheld from the public, although the show Palace has now been open for several days, and then we will freely discuss the propriety of the rumoured exclusions.

There is another subject of great annoyance to English exhibitors, which has marred to a great extent the general satisfaction which was at first experienced by all, from the beauty, taste, and excellence of the arrangements made in the Palace and annexed sheds—that is, the extension of the time first named in the programme for the duration of the show. It was fixed to last only about a week. Now, by a new decree promulgated since our arrival in Paris, it is to last until the 14th. Many causes contribute to making this a very serious evil. In the first place, it proves a very great inconvenience to exhibitors to be kept so long from their homes, together with their servants, at a time when both men and masters have pressing operations to attend to at home, especially in the case of those who, relying on a shorter absence, had made their arrangements accordingly, which arrangements are thrown into confusion from this unexpected delay. Another circumstance still aggravates that evil: the foot disease exists in the Palace among a goodly number of animals, and is rapidly extending. Some of our Shorthorns have been attacked, and had to be removed. The suffocating heat of the Palace when full of visitors, want of exercise, imperfect ventilation, are so many causes tending to the spread of this distemper, and make exhibitors still more anxious to remove their animals at the expiration of the time first named. On Tuesday last the question was freely discussed among English, Irish, and Scotch exhibitors, who, after a short consultation, determined to go in a body and wait upon Monsieur de St. Marie, the *Commissaire Général*, and lay this grievance before him. We think it due to this gentleman tó state that nothing could exceed the courtesy and good-feeling with which he received the deputation, headed by Lord Feversham, the Honourable King Harman, Captain Ball, Mr. R. de la Tréhonnais, &c. On his being asked for an interview, he immediately led the way into his private room; and Mr. de la Tréhonnais having explained to him the object of the step the English exhibitors had thought it expedient to take, he courteously replied, that being only subordinate to the Minister of Agriculture, whose orders he had to execute, the English exhibitors had better apply to him, he being the only competent authority to decide the question. But at the same time he begged to express his own opinion merely as a private individual, and asked them if, as gentlemen belonging to a country so famed for its strict adherence to the dictates of gentlemanly feelings, they should think it an act consistent with those feelings to go and pick a quarrel with the Minister for having extended a few days the duration of that great spectacle which had cost France more than forty thousand pounds, sixteen thousands of which were for prizes alone? After so much expense and trouble, was it not natural the French Government should feel inclined to extend the duration of the show with the view of affording to the people in general, and the great number of agriculturists from all countries who had flocked to Paris, an opportunity of admiring such a gathering of animals, implements, and produce as perhaps would never again be brought together? This view of the question produced the instantaneous effect of cooling down most of the grumbling, and the Deputation almost unanimously waived their intention to protest; and, after having thanked M. de St. Marie, left his room, resolved to make the best of their position, although their opinion as to its hardship had not undergone any material change.

We have spoken of the magnitude of this Exhibition in point of excellence in its arrangements, the merits of the things exhibited, and especially their unprecedented numbers. There are no less than 1,300 head of cattle, divided as follows:—Shorthorns 140, bred in England; subdivided into two classes—yearling bulls and yearling heifers; old bulls and cows. In the Young Class there are 25 bulls and 27 heifers; in the Old Class, 36 bulls and 43 cows. To these the programme had at first announced only four prizes to each category, or sixteen in all; but a subsequent decree has further extended the prize list, and eight prizes have been given to each of the bull classes, and seven to the heifers and cows respectively. Besides these, there are prizes given to the Shorthorns bred in France, which form a distinct class, and of which there are 55 exhibited, making a total of 195 Shorthorns.

The Herefords are most niggardly represented. There are two bulls and two cows altogether; that is four animals, three of which belong to Mr. Fisher Hobbs, competing for six prizes! What have the Hereford breeders been about? The Devons are not much better here, whatever they may be at the Bath and West of England shows; of these there are only four bulls and seven cows, to compete for eight prizes.

The Scotch breeds are, in our opinion, with the exception of the Shorthorns, better represented than any other, both in point of numbers and merits, the Ayrshire and Black-polled cattle especially; of the former there are 18 males and 60 females, bred in Scotland. To these 29 prizes, 8 for the bulls and 11 for the cows, have been given. Besides these 78 Ayrshire animals there are 17 more, born in France, which form a distinct class, making a total of 95 of the Ayrshire breed. Of the Black Angus tribe there are about 40 animals exhibited, to which 13 prizes were offered. Of the West Highland, 30 beasts are competing for 11 prizes. The Irish Kerry herd is represented by 23 animals, among which 8 prizes will be distributed. Altogether the number of animals exhibited by the United Kingdom, including the Channel Islands, is nearly 400.

The Dutch breed numbers about 40. The various Swiss tribes of horned cattle amount to no less than 228 animals, pretty equally divided between the Friburg, Bernese, Schwitz, Central and Eastern Switzerland, and Unterwald. Of the Tyrolese and Austrian herds there are 62 animals. Of the long-horned Hungarian, Moravian, Gallician, Bavarian, and Bohemian races there are 46 animals; and 4 buffaloes from Hungary. Saxony has sent 12 animals; Denmark and Holstein 32.

The French races, as may well be imagined, are very remarkably and numerously represented. The heavy and gaunt Norman breed muster 61 animals; the Flemish race, 37; the beautiful white Charolais breed, so similar to our Short-horns, amount to 36 animals; the Gascon race—some of which, it is said, found its way to England some two hundred years ago—is represented by only two male animals. The other breeds—such as the Garonese, Courtois, Breton, Limosine, Salers, Parthénaise, &c.—muster about one hundred more, which, with the French contribution to the Short-horns and other English breeds, make a total of nearly 500 head, many of which are the produce of the cross of Short-horn bulls with the native breeds, and thus form one of the most interesting features in the whole exhibition.

The sheep of all races and all countries are also very numerous. England has sent about 250 lots, of various breeds; Holland, 24 lots; Austria, about 100 pens; Saxony, 28; other foreign states, 18. France has contributed—of her own breeds, or of foreign sorts bred in France—nearly 200 pens: making a total of about 1,200 sheep, 500 of which are contributed by France, 400 by Great Britain, and the rest by the European states.

In the Pig class there are 171 animals, 72 of which are contributed by Great Britain, 82 by France, and 17 by other countries. Out of the 82 belonging to France, there are no less than 65 representing the English breeds; thus showing how widely they are being spread all over the country, and in what estimation they are held.

The Poultry class, &c., numbers 474 pens, containing about 1,400 birds.

In the Implement class there are 2,107 lots, comprising every kind of instrument or appliance connected with agriculture: of these, 571 belong to the United Kingdom, 3 to Australia, 88 to Belgium, 51 to Denmark, 5 to Holstein, 2 to the Roman States, 7 to the United States, 42 to the Grand Duchy of Luxembourg, 33 to Holland, 1 to Prussia, 5 to Saxony, 36 to Switzerland, 4 to Wurtemberg, and no less than 1,430 to France.

In the Agricultural Produce department there are 4,635 lots, only 120 of which belong to England, 480 to various other nations, and 4,065 to France, chiefly contributed by the Government Schools of Agriculture.

It is obvious that anything like an attempt to do full justice to this gigantic Exhibition is beyond our limits, and would take many ponderous volumes. The catalogue alone is a huge volume of 447 pages. We shall, however, in our next article, endeavour to give a general idea of the principal features, or more striking points of interest in the Palace, together with a comparative description of the principal breeds there exhibited.

The appalling inundations which have brought desolation, death, and unheard-of misery to so many homes, and utter ruin to so many people, have suggested a generous idea to one of our English exhibitors—Mr. Jonas Webb, who, seconded in the most magnanimous spirit by Mr. Charles Towneley, has commenced a list of subscriptions in aid of the many victims of this frightful calamity. There is also a project of offering to M. Tisserant, the late French commissioner in England, a tribute of the esteem in which he is held by those who know him.

All this will tend to cement the good feeling between the two nations, and bind still closer the tie of friendship which unites them. A common interest but recently brought them on the same field of battle, where the blood of their generous children was mingled, and freely, lavishly poured out, for the triumph of the cause of justice. Another interest has just brought them on a different battle-field—one of peace and plenty, where the value of victory is bestowed not on him that destroys most; but on the contrary, on him that produces most and best:—And now a generous sympathy, a common feeling of commiseration and charity, will again unite them by the strongest, the holiest bond of all—the bond of brotherly love to one another!

On Thursday night the foreign judges and other distinguished agriculturists were entertained by the French judges and members of the agricultural press. One hundred and eighty-five sat down to a sumptuous dinner in the beautiful saloons of Lemardelay, under the presidency of M. Dupin. After dinner, Mr. Evelyn Denison delivered in French (which he spoke with great purity of accent) a very remarkable speech, which was frequently interrupted by warm and enthusiastic cheers. After him M. Dupin, with the usual ready and clever eloquence of an old lawyer and pliant politician, delivered a long oration, which was received only with indifference, if not contempt. Then came M. de Kergorley; and lastly M. de Lavergne, whose clever, humorous, and really eloquent speech elicited the greatest plaudits, and most agreeably wound up the proceedings of the evening. The night before, Mr. Charles Towneley had entertained a few friends at the Trois Frères Provençaux, to celebrate the success of Master Butterfly and his other cattle, which, if rumour be true, have, as usual, gained the first prize in their respective classes; and on Monday (this day) Mr. Jonas Webb gives a similar entertainment also to celebrate his success.

On Friday morning the award of prizes was at last made known. One can hardly comprehend the reason of this unusual delay: it could not be to secure the advantage of secresy in order to keep up a kind of excited interest, for any one who chose to ask of the judges he happened to know who had this or that prize? was immediately satisfied.

In the Shorthorns, Mr. Charles Towneley gains the 1st prize in every class in which he competed. 1st prize to Master Butterfly for the aged bulls, 1st prize to Rosemary for the heifers, and 1st prize to Vestris 3rd for the cow class. The first prize in Yearling Bulls was given to Mr. Ambler, for Grand Master, since sold to Messrs. Fisher and Green, of Australia, for a large sum of money; the 2nd prize to Lord Monck, 3rd prize to Lord Hill, 4th prize to the Earl of Clancarty, 5th to Mr. Stewart Marjoribanks, of Bushey Grove, 6th to Mr. Cartwright, of Aynhoe.

In the Heifer class, 2nd prize to Lord Monck, 3rd to Mr. Ambler, 4th to Mr. Thomas Oliver, 5th to Captain Ball, 6th to Lord Hill, &c.

In the Aged Bull class, 2nd to Mr. Thomas Sadler, of Scotland, 3rd to the Earl of Clancarty, 4th to Mr. Tochard for a bull bred by Jonas Webb, 5th to Mr. Richard Stratton, of Broad Hinton, for a bull bred by Lord Hill, &c.

In the Cow class, 2nd prize to Mr. James Douglas, 3rd to Captain Ball, 4th to Lord Monck, &c.

In the Herefords, Mr. Fisher Hobbs gained the 1st prize for bulls, and 2nd for cows.

In the Devon class, Mr. Turner gained, as usual, the principal honours, Mr. Farthing, of Bridgewater, gaining also one prize.

In the Sheep classes Mr. Jonas Webb for the South Downs, Mr. Sanday for the Leicesters, Mr. Beale Brown for the Cotswolds, have been awarded the principal prizes.

In the Pig class, the first prizes have generally been taken by Frenchmen for animals bred in England, except for the Berkshire Boars, Mr. Bowly, of Cirencester, having been awarded the first prize in that class. The first and second prizes for Boars and Sows of the Small Breed were gained by three animals bred by Captain Gunter, of Earles Court, Brompton; the Rev. Morton Shaw also gained a prize for a boar of the Essex and Sussex breed.

We regret we cannot present a more complete list of the prizes, on account of their numbers, which, if completely given, would fill up two or three pages of our journal; we hope that the summary we give above will be found sufficient for the present.

When it is known that such breeders as Lord Feversham and Mr. Douglas were exhibitors in this Show—when it is considered that they had brought some of their best animals, which had gained prizes in many a Show in England and Scotland—it is, no doubt, to be wondered at that one should have gained no prize at all, and the other only one, although there were no less than thirty offered for shorthorns. We are told that their animals were disqualified, from being too fat: so were some of Mr. Stratton's, and those of other breeders equally unfortunate. We confess that, after a careful examination of the disqualified animals, and an impartial comparison with others that have gained prizes, we failed to discover, or even guess, the line of demarcation which the learned judges had, in their wisdom, thought proper and right to draw between flesh and fat. Lord Feversham's bull is, in the opinion of all good judges, a neat fleshy animal; and there is no doubt that the politicians and Paris lawyers, whose names we see on the judges' list, being very partial to the leathery beef eaten in France, mistook flesh for fat, and most flippantly disqualified him, thinking, no doubt, they had achieved a great triumph.

The reason alleged for the exclusion of fat animals, is no doubt a good one. Our fattening, it is said, fosters barrenness in females, and impotency in males. But no one can deny that great propensity to fatten is looked upon as one of the most precious and characteristic qualities of the shorthorn breed; and when we are called upon to judge an animal, we should have due regard to that point, as well as to any other, such as symmetry, &c. What is called quality of flesh, and mellowness of skin, are nothing but prognostics of that rare merit in an animal. Therefore, why should anyone condemn such an animal for being too fat, when it can be proved that in his case the concomitant evils of that high condition have not ensued, and when it can be proved that, in case of females, they regularly breed, and, in that of males, they are safe getters? And this is the case with Lord Feversham's and Mr. Douglas's discarded animals. Where can animals be seen in a higher condition than at Towneley Hall? and yet where can any one see more regular breeders or safer getters? We could name many other instances where high feeding is most felicitously combined with fruitful breeding. The fact is, that the tide of public opinion having once set in that particular direction, an outcry is immediately raised when an instance of barrenness can be detected in a fat animal; but no one stops to consider, on the other hand, how many more cows in poor condition are also barren, and how many more in a high condition are the reverse.

But are the upholders of low condition in breeding animals prepared to generalize their theory, and apply it invariably? Do not many instances occur where a poor, half-starved animal, that would never stand the bull whilst in that wretched condition, would get in calf as soon as it was put upon a more nutritious diet, and actually become fat?

Our experience, corroborated by that of many old breeders, tells us that however plausible this theory may be, it admits of so many exceptions that the rule is by no means an absolute one, and ought never to sway the judgment of those who are called upon to pronounce on the merits of competing animals on such an occasion as this. In the application of such a rule impartiality is merely an impossibility; and we really feel grieved that such a beautiful exhibition, so complete in its arrangements, so tastefully prepared, so orderly in its management, so successful in its issue, should have been depreciated in its character by so many cases of utter ignorance or injustice on the part of the judges who had to award the prizes.

Several sales have taken place; but we regret to say that great sacrifices had to be submitted to, in order to induce foreign breeders to purchase. With the exception of two or three instances, where good animals have fetched a good price, there does not seem any inclination on the part of buyers to give for the best animals anything like a fair price. We are also afraid many exhibitors have considered this exhibition more as a fair than a show, and brought over for sale numerous animals no one would think of buying in England, except for butchers' price. This will no doubt produce the worst possible effect, and greatly tend to discredit our best herds on the continent, and throw a slur on the good faith of many English breeders. There are also numerous animals sold at a very low figure; this will of course occasion great obstacles in the sale of the good and trustworthy ones, as such cases of cheapness will be pointed at, and used as arguments to obtain a reduction in the price demanded, and thus greatly interfere with the sale of good animals.

On Tuesday next the distribution of prizes will take place, and on that day animals to which no prizes have been awarded, and not intended for sale, may be removed from the Show-yard. This modification in previous arrangements was, no doubt, granted to the energetic representations of the English exhibitors, kindly laid before the Minister by M. de St. Marie.—*Paris, June* 7.

The disruption of the great show is complete; the huge and gaudy Palace is now stripped of its life and gay decorations; the pageant is over; and nothing but nakedness, emptiness, silence, and solitude remain, from that bustling animation and fervid activity which we have previously attempted to describe.

On Tuesday, the public distribution of the prizes took place; but only those who had gold medals awarded to them were admitted to the hall, which had been prepared in one end of the gallery, partitioned off with red gold-fringed hangings. This check on the admission of prize-takers was owing to their great number: if all the successful exhibitors had been admitted, the room would have been too small; and if all names had been called out, a whole day would not have been sufficient. The Minister of Agriculture and Commerce, supported by M. de St. Marie and M. Mornay de Morny, all in full uniform, presided on this intensely interesting occasion: behind them sat all the Judges. A military band attended, and greatly frightened the various tribes of animals below by the loud crash of their brass instruments, in which the cattle now and then wildly joined with their bellowings, intoned in every discordant key known to the echoes of the Alps, the Scotch Highlands, or the boundless steppes of Hungary. As the list of the awards would fill the whole space of this Journal, we abstain from the attempt; we give, however, below a simple abstract of the prizes gained by Englishmen.

As we stated at the close of our last report, permission was granted to remove the animals early on Tuesday night. By Wednesday morning, a good many stalls were empty, several English exhibitors having eagerly availed themselves of the timely permission to withdraw their cattle from the midst of disease, the close atmosphere, and the crowded and dusty place in which they had been so long confined. Indeed it was high time to remove them; the foot disease was rife all over the Palace; comparatively few animals were free from its nefarious symptoms; and, borne on the wings of a heated atmosphere, caused by countless feet, impregnated by the tainted breath of numberless beings, creeping along the floors from straw to straw, pervading the whole space with the steady but sure progress of capillary attraction, it struck on all sides its many victims with relentless activity. Fortunately the virulence of the disease was not alarming, most animals attacked recovering in a few days; but several good bulls had to be sold at butchers' prices, promising breeders being afraid to take them to their own stables, apprehensive lest they should not be able to stand the journey. Another unfortunate cause greatly tended to check the sale of good animals: a great many spirited agriculturists who had come to the show with the view of buying, were prevented from doing so by the impossibility of taking the cattle to their estates, the midland railways being broken up by the recent inundations. Some indeed had their whole property under water. Nevertheless a good if not complete clearance had taken place in the English, Scotch, and Irish portions of the exhibition; but on the last day very low prices had to be submitted to.

Towards the close of the exhibition, when foreign exhibitors had to submit to themselves the momentous question, "Shall I sell? or shall I undergo over again all the trouble, annoyance, and expense of a long and tedious journey with my cattle? suspicious-looking gentlemen, of portly appearance, florid countenances, and well-to-do demeanour and gait, began to show themselves in the Palace. They were unmistakeably gentlemen of the Halle, eyeing with a knowing glance, handling with a knowing hand the animals remaining unsold. This circumstance forcibly reminded one of the jackals and birds of prey which prowl about a gory battle-field when the fight is over, looking for a carrion feast. The truth is, that those gentlemen had hit upon a good scent. What with the disease, and what with the disinclination on the part of exhibitors to take back their cattle, the Paris butchers—here we must call them by their names—had a good harvest of bull-flesh; and many, no doubt, will be knowing enough not to kill their beasts, but sell them again to breeders, when cured of the distemper they are now suffering from.

We have had so much to say about the cattle department of the show, that we have said little or nothing of the implements. We will now devote a short space to that important part of the exhibition, and chronicle the principal results of the trials that have taken place, and their results as regards English exhibitors.

We have stated that in that department there were altogether 2,107 lots exhibited, out of which 371 belonged to the United Kingdom, the superiority of which was most conspicuously demonstrated. In the plough class the three first prizes were taken by Howard, Ransomes and Sims, and Dray and Co., ex æquo with three Frenchmen. For deep ploughing, M. Bella, the able Director of the Grignon Agricultural College, gets the first prize, Messrs. Dray and Co. the second. For shallow ploughing, Messrs. Ransomes and Sims get the first prize. For stiff clay land, first prize—Mr. Howard; second—Messrs. Ransomes and Sims, &c., &c. All through the prize list, which is most voluminous, the same is to be observed, our English implement makers being always at the top. Thus, out of 153 prizes given for various classes of implements, although English exhibitors had only 371 lots out of 2,107—that is, a little more than one-seventh of the whole—they have gained 58 prizes, or more than one-third.

The trial of implements took place last Thursday at Villiers, in a field well adapted for such a purpose. Fowler's steam plough had all the honours of the day, and performed its work to the great amazement and satisfaction of all present. We forbear saying anything more about these trials, which are familiar to our readers, and will be soon repeated at Chelmsford. We give elsewhere an abstract of the award of prizes.

The following is the address read by the Minister of Agriculture on the distribution of prizes at the Agricultural Show in Paris:—

"Gentlemen,—I think I may without pride proclaim at the outset of the ceremony the full success of the Exhibition, and the definitive triumph of the cause of Universal Agricultural Competitions. This institution, very modest in its origin, was commenced in 1850; how rapid, therefore, has been its progress, and how much its circle has been increased even since last year! The vast palace erected for the Exhibition of Industry has not been large enough for this agricultural show. The bovine race alone almost equals in number that of all the animals exhibited in 1855. Independently of the races, the principal qualities of which I pointed out to you last year, there is now in this Exhibition for the first time the polled breed of Angus, those from the mountains of Scotland, the Irish breed from Kerry, that of Central and Eastern Switzerland, those of Denmark and Holstein, and lastly, thanks to the enlightened zeal for which I thank its government, the most highly esteemed breeds from Austria. Near those noble animals are also ranged more than 9,000 specimens of other races, which fill the farmer's stalls, animate his fields, or give life to the poultry-yard. Round them have been classified in innumerable quantity the most precious gifts of the soil, the most varied productions of cultivation, and the newest and most ingenious machines—those powerful and indispensable auxiliaries to human labour. * * * * Examine the catalogue of our Exhibition; in addition to its agricultural value it has a great political signification. Have you not remarked with pleasure that names the most separated by civil dissensions have come together at this peaceful tournament? The reason is that agriculture has its rewards for every legitimate ambition, that all parties have an equally powerful interest in it, and that the beauty of the productions of agriculture gives the measure, and in certain respects the degree, of civilization. * * * * Between us all there has been formed an additional bond, and you have just given a striking proof of it.

During the course of this Exhibition, devastation and mourning have fallen on our richest valleys. The Emperor, who is always the first to hear the cry of distress, was anxious, in crossing over the inundated plains, to give his assistance and his consolation to the sufferers, and to hold out to them the promises of France. You, without distinction of country and of origin, have shared in our sentiments of generous sympathy for the victims, and in admiration of our Sovereign. You have liberally united in our efforts to alleviate so many misfortunes. I thank you in the name of the Emperor and in the name of France. Before separating from you, gentlemen, I give you an invitation to meet here again next year; you may rely on the same kind hospitality, and allow us to hope that you will evince the same eagerness to attend here." (Applause).

The following is a complete list of exhibitors who have received first prizes :—

CATTLE.

Animals bred out of France before 1st May, 1855.

Durham Breed.—Males: 1,000 fr., Mr. Henry Ambler, Halifax, Yorkshire. Females: 700 fr., Mr. Chas. Towneley, Towneley Hall (England). Males: 1,000 fr., Mr. Towneley. Females: 700 fr., Mr. Towneley.

Hereford Breed.—Males: 900 fr., Mr. F. Hobbs, Boxted Lodge, Essex. Females: 600 fr., Mr. W. Perry, Cholstrey, Herefordshire.

Devon Breed.—Males: 900 fr., Mr. G. Turner, Barton, near Exeter. Females: 600 fr., Mr. G. Turner.

Jersey and Guernsey Breed.—Males: 600 fr., Mr. M. Fowler, senior, Little Bushey Farm, near Watford. Females: 500 fr., Mr. G. Torode, Guernsey.

Ayrshire Breed.—Males: 800 fr., Mr. H. Kirkwood, Killermont (Scotland). Females: 600 fr., Sir M. R. S. Stewart, Ardgowau (Scotland).

Angus and Galloway Breed.—Males: 900 fr., Mr. W. M'Combie, Tillyfour (Scotland). Females: 600 fr., Mr. W. M'Combie.

West Highland Breed.—Males: 800 fr., Messrs. Smith Brothers, Mimore (Scotland). Females: 600 fr., the Duke of Sutherland, Dunrobin (Scotland).

Kerry Breed.—Males: 600 fr., Lord Talbot de Malahide (Ireland). Females: 500 fr., Mr. O'Reilly-Rease, Palmerston Farm, near Ashbourne (Ireland).

Holland Breed.—Males: 900 fr., M. François Salmon, St. Fnscien (Somme). Females: 600 fr., M. Preuyl, Geervliet (Holland).

Fribourg Breed.—Males: 900 fr., M. A. Ecofley, Villard-sous-Mont (Switzerland). Females: 600 fr., M. J. Esselva, Bulle (Switzerland).

Berne Breed.—Males: 900 fr., M. P. Hirschi, Thun (Switzerland). Females: 600 fr., M. P. Hirschi (Switzerland).

Schwitz Breed.—Males: 900 fr., M. Gottefried Burgi, Art (Switzerland). Females: 600 fr., M. Clément Sidler, Immensee (Switzerland).

Grisons Breed.—Females: 500 fr., M. Frédéric Valaar, Hanz (Switzerland).

Oberhaali and Underwald Breeds.—Males: 600 fr., M. Louis Amstall, Buochs (Switzerland). Females: 400 fr., M. Nicholas Rohrer, Underwald (Switzerland).

Pinzgau and Montafon Breeds.—Males: 900fr., M. Johann Buchner, Caprun (Austria). Females: 600fr., M. Franz Koch, Ischl (Austria).

Oberinihal, Zillerthal, and Dux Breeds.—Males: 900 fr., M. Simon Angerer, Wattens (Austria). Females: 600 fr., M. Thomas Troppmaier, Finkenberg (Austria).

Murzthal and Upper Styria Breeds.—Males: 800fr., M. Georges Stoger, Barnegg (Austria). Females: 500fr., M. Simon Krendl, Bruck (Austria).

Hungarian and Gallician Breeds.—Males: 700fr., Baron de Ladislas Wenkheim, Bekea (Hungary). Females: 500fr, M. de Ladislas Wenkheim.

Bohemian and Moravian Breeds.—Males: 700fr., Prince Jean Joseph de Schwarzenberg, Postelberg (Bohemia). Females: 500fr., Prince de Lichtenstein, Vienna (Austria).

Buffaloes Breed.—Males: 700fr., Comte de Tassilo Festetics, Keszthety (Hungary).

Glane Breed.—Males: 900fr., M. Tilly, La Chapelle-Servan (Marne). Females: 600fr., M. Purgon, Salival (Meurthe).

Voigtland Breed.—Females: 800fr., M. Joseph Dohler Kleingra (Saxony).

Jutland Breed.—Males: 900fr., Conseiller d'Etat Tang, Norrevosborg (Denmark). Females: 600fr., M. Gregeraen, Engbjerggard (Denmark).

Angeln Breed.—Males: 900fr., Agricultural Society of La Slie (Duchy of Schleswig). Females: 600fr., to the same society.

Breed of Polders of Holstein.—Males: 900fr., M. Wulff, Grenenthol (Holstein). Females: 600fr., M. Alsen, Ilzehoe (Holstein).

Breitenburg Breed.—Males: 900fr., M. Wulff. Females, 600fr., M. J. Sievers, Hasseldicksdanen (Holstein).

Different Foreign Breeds.—Males: 700fr., M. Leopold Vaudamme, Morselle (Belgium). Females: 500fr., M. Steigmuller, Frankenbach (Wurtemberg).

ANIMALS BRED IN FRANCE.

Normandy Breed.—Males: 800fr., M. Lesenne, Saint Jouin (Seine-Inférieur). Females: 500fr., M. de Laboire, Castillon (Calvados).

Flemish Breed.—Males: 800fr., M. d'Hardiviller Labitte, Thieux (Oise) Females: 500fr., M. Dutfoy, Eprunes (Seine-et-Marne).

Charollais Breed.—Males: 800fr., M. Bellard, St. Aubin-les-Forges (Nièvre). Females: 500fr., Comte de Bouilé, Villeux (Nièvre).

Gascony Breed.—Males: 800fr., M. Doucet, Boulogne (Haute Garonne).

Agen Breed.—Males: 600fr., M. Glezis, Lavelanet (Haute Garonne). Females: 500fr., M. Prom, St. Caprais (Gironde).

Bazadaize Breed.—Males: 800fr., M. de Laffitte Perron, Baziu (Gers). Females: 500fr., M. de Lavergne, Pomiro (Gers).

Comtoise Breed.—Males: 800fr., M. Vernier, Lure (Haute Saône). Females: 500fr., M. Charpy, Besançon (Douba).

Limousine Breed.—Males: 800fr., M. Bellard. Females: 500fr., M. Talamon, St. Priest Taurion (Haute Vienne).

Auvergne Breed.—Males: 800fr., Baron de Flaghac, St. Georges d'Aural (Haute-Loire). Females: 500fr., M. Fabre, St. Bonnet (Cantal).

Parthenaise Breed.—Males: 700fr., and gold medal, M. Tesson, Napoléon (Vendée). Females: 500fr., M. Boiscourbeau, Coneron (Loire-Inférieure).

Breton Breed.—Males: 400fr., M. Salomon Cohen, Poussery (Nièvre). Females: 350fr., M. Kerjégu, Travarez (Finistère).

Durham Breed.—Animals born 1st of May, 1855—Males: 1,000fr., M. Henri Lefebvre de Sainte-Marie, Bignon de Beaumont (Mayenne). Females: 700fr., Comte de Falloux, bourg d'Ilé (Maine-et-Loire).—Animals born before 1st of May, 1854—Males: 1,000fr., M. Bourton-Lévêque, Ponts de Cé (Maine-et-Loire). Females: 700fr., Comte de Tullaye, Ménil (Mayenne).

Ayrshire Breed.—Males: 900fr., Marquis de Dampierre, chateau de Plassic (Charente-Inférieure). Females: 600 fr., M. Armant Durécu, Thuitseines (Eure).

Holland Breed.—Males: 900fr., M. Gilles, Thieux (Seine-et-Marne). Females: 600fr., M. Salmon, Saint-Fuscien (Somme).

Different Crosses.—Males: 600fr., M. Bourton-Lévêque: Females: 500fr., M. Bellu, Grignon (Seine-et-Oise).

SHEEP.

ANIMALS BRED IN ENGLAND.

Merino Breed.—Males: 600fr., Mr. T. Sturgeon, Grays, Essex, England.

Dishley and New Kent Breed.—Animals born before 1st May, 1855.—Males: 600fr., Mr. W. Sanday, Holme Pierrepont, England. Females: 300fr., same. Animals born before 1st May, 1854—Males: 600fr., Mr. G. Turner. Females: 300fr., Mr. W. Sanday.

Cotswold Breed.—Animals born before 1st May, 1855—Males: 600fr., Mr. G. Fletcher, Shipton, Gloucester, England. Females: 300fr., Mr. B. Browne, Hampen, England. Animals born before 1st May, 1854—Males: 600fr., Mr. J. Brown, Salperton, England. Females: 300fr., Mr. J. Alcock, Temple Guilding, England.

Southdown Breed.—Animals born before 1st May, 1855—

Males: 600f., Mr. Jonas Webb, Babraham, England. Females: 300f., Mr. H. S. Hayward, Folkingtou, England. Animals born before 1st May, 1854—Males: 600f., Mr. Jonas Webb. Females: 300f., Mr. John Hutchison, Monyruy, Scotland.

Hampshire Breed—Mr. J, W. Brown, Ufacote, England.

Cheviot Breed.—Animals born before 1st May, 1855—600f., Mr. J. Carruthers, Kirkhill, Scotland. Males born before the 1st of May, 1854: 600f., Mr. J. Carruthers. Females: 300f., Mr. T. Borthwick, Langholm, Scotland.

Blackfaced Breed.—Males: 500f., Mr. J. Drive, Barr, Scotland. Females: 300f., Mr. G. Saundilands, Cumberhcad, Scotland.

ANIMALS BRED IN OTHER FOREIGN COUNTRIES.

Dutch Texel Breed.—Males: 500f., M. de Gœde, Pumerend, Holland. Females: 300f., the same.

Austrian Merinos.—Males: 600f., Prince Esterhazy, Vienna, Austria. Females: 400f., Count Henri de Mœunich, Freistadt, Silesia.

Mérinos électorale, d'Autriche.—Males: 600f., Baron J. Bartenstein, Troppau, Austria. Females: 400f., Comte de Schwartzenberg.

Mérinos negretti, d'Autriche.—Males: 600f., Comte Stephan Karolyi, Foth, Hungary. Females: 400f., Prince de F. Kinsky, Vienna, Austria.

Saxon Merinos.—Males: 600f., M. Ch. Gadegaat, Thal, Saxony. Females: 400f., ditto.

ANIMALS BRED IN FRANCE.

Merinos of the Mountainous Country.—Males born since 1st November, 1850: 600f., M. Guenebault, Poiseul la Ville, Côte d'Or. Males born before the 1st November, 1854: 600f., M. Godin, Chatillon-sur-Seine, Côte d'Or. Females: 400f., M. Guenebault, Laperière, Côte d'Or.

Breed of the Flat Country.—Males born since the 1st November, 1854: 600f., M. Simphal, Chouy, Aisne. Males born before the 1st November, 1854: 600f., ditto. Females: 400f., M. Dulfoy.

Dishley Long-wool Breed.—Males: 600f., M. Louis Pilat, Brebières, Pas de Calais. Females: 300f., M. Poutrel, Bavent, Calvados.

Southdown Breed.—Males and females; three first prizes of 660f., 600f., and 300f., M. Allier, Petit-Bourg, Seine-et-Oise.

Dishley Merinos.—Males and females: two first prizes of 500f. and 400f., with large gold medal, M. Pluchet, Trappes, Seine-et-Oise.

PIGS.

ANIMALS BRED ABROAD.

English, Scotch, and Dutch Breeds.—Males, 300fr., Mr. E. Bowly, Siddington (England). Females: 200fr., M. Mené, Beauvais (Oise).—Small races. Males: 300fr., M. Weyer, chateau de Guevels (Grand Duchy of Luxemberg). Females: 200fr., M. Pavy, Epeigné-sur-Deine (Indre-et-Loire).

Austrian Breed.—Males: 300fr., M. Colonna Von Tirza, Grosawarden (Hungary). Females: 200fr., ditto.

Mangalièze Breed.—Males and Females: 360fr. and 200fr., M. Coloma.

Lucerne Breed.—Males: 300fr., M. Wigged, Horb (Switzerland).

ANIMALS BRED IN FRANCE.

Native Breed. —Males: 300fr. M. Viel, Alexain (Mayenne). Females: 200fr., M. Allier, sen.

Foreign Breeds.—Males and Females: first two prizes, 300fr. and 200fr., M. Allier.

GOATS.

Males: 100fr., M. Louis Tydgatt, Gand, Belgium. Females: 80fr., M. Shati, Vanderwagithal, Switzerland.

RABBITS.

M. Thierry, Haules clos de Troyes, Aude.

AGRICULTURAL IMPLEMENTS AND MACHINES.

Ploughs for all Purposes.—150fr., Mr. Howard, Bedford, England, and M. Bella, Grignon, Seine-et-Oise.

Ploughs for Deep Ground.—125 fr., M. Bella.

Ploughs for Light Soils.—100fr., Ransome and Sims, England.

Ploughs for Heavy Soil.—100fr., Mr. Howard.

Ploughs *tourne oreilles.*—100fr., M. Bella.

Heavy Ploughs.—125fr., Mr. Howard.

Light Ploughs.—100fr., Mr. Howard.

Harrows and Grubbers.—250fr., Mr. Coleman, Chelmsford (England).

Rollers for Breaking Clods.—250fr., *ex æqua*, MM. Bella and Crosskill, Beverley (England).

Sowing Machine.—250fr., Mr. Hornsby, Grantham (England).

Ditto.—250fr., M. de Calbiac, Casteljeloux.

Ditto, casting at the same time the seed and pulverized manure.—250fr., Mr. Hornsby.

Ditto, casting at the same time the seed and liquid manure.—250fr., W. Dray and Co., London.

Dibbler for Beetroot, &c.—124fr., Mr. Garrett.

Horse Hoes for Corn.—125fr., Mr. Howard.

Different Hand Instruments.—125fr., M. Hildebrand, Semouse (Vosges).

Mowing Machines.—500fr., M. Robert, Paris.

Winnowing Machine.—250fr., Mr. Thompson, Lewes (England).

Horse Rake.—125fr., Mr. Marychurch, Haverfordwest (England).

Steam Engines for Different Agricultural Purposes.—600fr., Messrs. Barrett, Exall, and Andrewes, Katesgrove Works (England).

Moveable Steam Engines for Agricultural Purposes.—600fr., Messrs. Hornsby and Son, Grantham (England).

Racks, &c., for Stables, 300fr., M. Pinet, jun., Billy (Indre et Loire).

Fixed Thrashing Machines.—300fr., M. Duvoir, Linncour (Oise).

Ditto.—300fr., M. Nicolais, Paris.

Moveable Ditto.—300fr., Messrs. Ransome and Sims.

Ditto.—250fr., Mr. Barrett.

Ditto.—250fr., M. Lotz, fils ainé, Nantes (Loire Inférieure).

Thrashing Machines.—250fr., M. Pinet, fils.

Crushers.—150fr., Mr. Turner, Ipswich (England).

Machines for Thrashing Maize.—150fr., M. Desport, Monton (Dordogne).

Root-cutters for Cattle.—100fr., M. Quentin Durand, Paris.

Ditto for Sheep.—100fr., Mr. Ransome.

Ditto with Double Action.—100fr., Mr. Ransome.

Chaff Cutter.—125fr., M. Radidier, Paris.

Ditto.—125fr., M. Leclerc, Bruges.

Carts for one Horse.—125fr., Mr. Robert Law, Shettleston (Scotland).

Machines for Spreading Liquid Manure.—250fr., Mr. Thomson; 2nd Prize, M. Harry Verger; Honourable Mention, M. Chatel, Vare.

Scales for Weighing Animals.—400fr., Messrs. Beranger and Co.

Malaxeurs.—1st Prize, 250fr., M. Schlosser, of Paris.

Machines for Making Draining Pipes.—400fr., Mr. John Whitehead, of Preston (England).

Instruments for Drainage.—125fr., Messrs. Dray and Co.

Pumps.—250fr., Messrs. Faure and Co., of Paris.

Apparatus for Cooking Food for Cattle. — 100fr., Mr. Stanley, Peterborough (England).

Beehives.—1st Prize, M. Roux, of Lyons.

For a Machine for Distributing Dung.—250fr., to Mr. Garrett, Saxmundham (England).

200fr., M. Keelhoff, Neerpelt (Belgium), " Traité pratique sur l'irrigation des prairies."

200fr., M. Lemonnier Jully, Chatillon (Côte-d'Or), for his moveable wine press.

200fr., M. Beuchson, Fert-é-sous-Jouarre (Seine-et-Marne), for his hand mill.

200fr., M. Bella, for his root-cutter.

150fr., MM. Blondeau Brothers, St. Vit (Doubs), for their collection of drainage piping.

150fr., M. Borie, Paris, for his tubular bricks.

150fr., M. Fauconnier, Paris, for his oil-cake crushing mill.

100fr., Mr. Thompson, Lewes (England), for his levelling instruments.

100fr., M. Allibert, Grignon (Seine-et-Oise), for his carbonic acid measuring apparatus.

200fr., M. Touaillon, Paris, for his grain cleaning apparatus.

SUPERPHOSPHATE OF LIME.

We had just laid down Jethro Tull's refreshing volume (published in 1732)—had been pondering over his condemnation of the use of dung for turnip crops—when a Lancashire subscriber wrote us, "If you would give in your columns the receipt for making superphosphate from bones, it would be most useful to your readers." Strange revolutions these in one century! Jethro Tull in 1730 telling us, "I have made many trials of fine dung; but I have for these several years last past left it off;" while in 1856, chiefly for root crops, the wide world is explored for manures. Startling facts these, for the farmers of the old school—cheering prospects for the modern experimental searchers after truth—and a ground for very useful reflection for all who are over fond of theorizing on agricultural practices. When Tull condemned the use of dung, and when his neighbours raised shouts of derision at his noble efforts, they were all about as wide of the truth as the fen-land farmer, who at the close of one of Dr. Buckland's eloquent after-dinner addresses, at the Cambridgeshire Meeting, exclaimed, with a voice that could have been heard across Bardolph Fen, "Aye, Doctor, it may be all true; but by Gom, there's nothing like mook."

It has taken a long century to establish the truth of some of Tull's assertions—his drill husbandry—his deep ploughing—his complete cleansings and pulverizations: another, but we feel a much shorter interval, will make other general advances—will effect the still more general use of artificial manures, will bring forth yet more powerful land-cleansing and digging machines. The farmers of 1876 will, perchance, keep fewer farm-horses, raise more food for man: they may, it is more than probable, talk with some compassion of the citizens of a past generation, who imported at a great expense, from the other side of the globe, nitrogenous manures, whilst they poured huge quantities of a similar kind into their own rivers. The chairman of the country meeting of the Royal Agricultural Society in 1956 will, perhaps, talk of these things as of some old tale of the Druids—strange notions, not exactly comprehensible: he may enliven his speech by referring to the correspondent of a contemporary, who gravely denounced the then lately proposed use of oil of vitriol and bones as a wild scheme, only quite certain to "burn up the land."

But we have to answer the question of our subscriber as to the manufacture of superphosphate of lime from bones. The operation, supposing always that it is the farmer who wishes to make his own, is not very difficult (although we much doubt its economy, except the turnip growers despair of finding a trustworthy manufacturer). It consists in finely pulverizing the bones, and then thoroughly mixing them in a leaden or earthen vessel with about 44 per cent. of their weight of *previously* diluted (with water) sulphuric acid. The analysis of boiled bones has been given by Professor Way, in the twelfth volume of the "Journal of the Royal Agricultural Society." He found in 100 parts of these

Moisture	10 Parts.
Animal matter	16
Sand	3
Phosphate of lime	60
Carbonate of lime	11
	100

The quantity of oil of vitriol required to convert the phosphate of 100lbs. into bi-phosphate here will be

For the carbonate	11 lbs.
For the phosphate	33
	44

There are other impure varieties of phosphate of lime used in the making of bi-phosphate, such as bone-charcoal, bone-ash, guano, coprolites, &c., few of which are commonly available by the farmer; nor can he fairly hope to compete with even the honest manufacturer, in cheapness, since he neither has the machinery nor the chemical knowledge requisite to ensur-purity in his materials; neither does he possess the advantage which the manufacturer possesses, in being the preparer of his own sulphuric acid. If, however, our subscriber wishes to become a manufacturer, he will find in the volume to which we have referred, most of the ordinary processes described.

NATIVE GUANO.

Sir,—There are few things more important to the agriculturist than an abundant supply of manure to his green crops; every other source of profit usually follows in the wake of this: once get him plenty of winter keep, and grass and grain will follow, and that which will move the land to give up swedes and mangolds will, with slight additions, still stir it to go through the rotation.

The great value of the fertilizing powers of guano is very much enhanced by its lightness. The carriage of guano inland from the water's edge to the farm, and thence to the steepest distant fields on the farm, is scarcely worth a consideration, seldom amounting to more than 8 per cent. upon the first cost of the guano, or to more than 5s. per acre, if charged in that form upon the land. Any article proposed to meet the difficulties that is now met by guano must be *light*, therefore water must be excluded, and minerals generally, on account of their weight; bulk, although some inconvenience in transit, would be rather an advantage than otherwise at the journey's end, since we have to add earth or other matter, as ashes or the like, to enable us to distribute guano in proper proportions. A seam or vein of compressed vegetable matter, friable and easily reduced to powder, after the fashion of leaf-mould, would go far to fulfil our expectations on this head, for pure leaf-mould is well known in horticulture as the only article that every plant will grow in, and that most plants require for their successful cultivation.

I have found such a vein of pure leaf-mould in a state of preservation not to be surpassed, for it is preserved in pickle, and that upon a gigantic scale, in the bed of the sea in Torbay. I have for years past had some of it carted for manure. It readily parts with its water, and becomes hard like bog peat. It is the deposit of centuries accumulated in this creek or bay from storms, being pure sea-weed, black as ink, exactly like the deposits of peat in our inland bogs, only made of materials originally different, and preserved in a medium highly favourable to it.

The myriads of grubs that feed upon decaying sea-weed cast upon our shores show at once the rich manuring properties which it possesses, and the odour exhaled from heaps of it drawn upon the land for manure equally tell its properties as dung; in short, it is a source of wealth to all lands lying within reach of it. But this article which I now speak of has of itself really no bad smell, beyond that of any dirt accidentally mixed with it, hence it appears to be calculated for quite another sphere of action than sea-weed; and as sea water is the only article that has to be got rid of in it, that may easily be pressed out, or made to leave it by centrifugal force. The seam of native guano is quite exposed at low water, and no one has hitherto interfered with our carting it away. Acres of it exist in the bay many feet deep.

I have tried it with garden crops of all kinds, as well as grass land. It has no fault that I can find, and is certainly a cheap and most valuable fertilizer. Alex. Forsyth.

St. Mary's Church, Torquay, May 28, 1856.

METEOROLOGICAL DIARY.

Barometer.			Thermometer.			Wind.		Atmosphere.			Weat'r.
1856.	8 a.m.	10p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
May 23	29.64	29.55	42	66	52	S. West	fresh	fine	sun	fine	dry
24	29.55	29.61	47	61	51	S. West	fresh	fine	cloudy	cloudy	rain
25	29.61	29.85	47	66	54	W. by S.	gentle	fine	sun	cloudy	dry
26	29.94	29.90	48	64	54	W. by S.	fresh	fine	sun	fine	dry
27	29.90	29.70	51	72	56	W. by S.	gentle	fine	fine	cloudy	dry
28	29.61	29.73	49	64	50	Every way	calm	fine	sun	fine	rain
29	29.87	30.13	47	60	49	North	airy	cloudy	fine	cloudy	showery
30	30.19	30.10	42	56	47	N. East	lively	fine	cloudy	cloudy	rain
31	29.94	29.75	43	50	47	Northerly	lively	cloudy	cloudy	cloudy	rain
June 1	29.74	29.80	46	68	49	W. by S.	airy	cloudy	fine	fine	rain
2	29.84	29.96	45½	71	53	W. by S.	airy	fine	sun	clear	dry
3	30.00	30.07	46½	75	58	S. West	airy	fine	sun	clear	dry
4	30.10	30.17	50	75	61	S. West	airy	fine	sun	cloudy	dry
5	30.23	30.18	52	67	51	N. East	lively	fine	fine	fine	dry
6	30.25	30.30	42	65	52	Variable.	calm	fine	fine	fine	dry
7	30.33	30.29	46	70	54	W. by S.	airy	fine	fine	cloudy	dry
8	30.29	30.28	51	69	61	W. by S.	gentle	fine	fine	cloudy	dry
9	30.24	30.17	56	67	61	W. by S.	gentle	fine	fine	cloudy	dry
10	30.18	30.14	55	72	58	West	gentle	fine	sun	fine	dry
11	30.20	30.10	49	73	55	S. West	airy	fine	sun	fine	dry
12	30.01	29.97	51	64	57	S.S.W.	forcibl.	fine	cloudy	cloudy	showery
13	29.84	29.60	56	64	57	S.S.W.	brisk	cloudy	cloudy	cloudy	rain
14	29.60	28.81	53	64	49	W. S. W.	gusty	fine	cloudy	fine	rain
15	29.96	30.15	44	71	53	S. S. W.	gentle	fine	sun	clear	dry
16	30.20	30.10	45	72	56	S. S. W.	gentle	fine	sun	cloudy	dry
17	29.99	29.94	49	67	58	W. by S.	gentle	cloudy	cloudy	cloudy	dry
18	29.95	29 85	48	72	56	W. by S.	gentle	fine	sun	cloudy	dry
19	29.78	29.58	51	64	54	S. S. W.	gentle	cloudy	cloudy	cloudy	rain
20	29.58	29.80	50	70	53	W., Northerly	var.	cloudy	sun	cloudy	rain
21	30.10	30.05	50	70	55	W. by N. & S.	var.	fine	sun	cloudy	rain

ESTIMATED AVERAGES OF JUNE.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.480	29.60	90	37	58.7

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
66.6	48.32	54.97

WEATHER AND PHENOMENA.

May 23. Pretty fine.—24. Threatening, cloudy.—25. Fine.—26. Cloudy, fine again.—27. Day fine.—28. Fine till sunset, rainy night, much rain.—29. Broken clouds.—30, 31. Particularly cold, and some rain.

LUNATION.—Last quarter, 27th, 5h. 33m. morn.

June 1. Weather much improved.—2, 3. 4. Fine.—5. Change of wind.—6, 7. Cold, and overcast.—8, 9, 10. More summer-like.—11. Small coloured unar halo.—12. Fierce wind introduces the rains of 13th and 14th.—15. Balmy day.—16. Much cirrus.—17. Changeable.—18. Fine and sunny.—19. Showery.—20. Warm and sunny, heavy thunder.—21. Fine till 3 p. m., showery.

LUNATIONS.—New moon, 2nd, 11 h. 40 m. aft.; first quarter, 10th, 1 h. 50 m. aft.; full moon, 18th, 11 h. 52 m. morn.

REMARKS CONNECTED WITH AGRICULTURE.

The weather had been favourable generally until the drenching rain and thunder-storm before hay-making began in earnest about the third week. Several lunar halos preceded the broken weather. Wheat came on sluggishly, and not a single ear discernible till the 17th and 18th. Much now depends upon warm forcing days prior to the usual July showers. Hay-making has begun; but the storm of the 20th, and that of the 21st evening, bring many acres half-made into some danger.

Croydon, June 21. JOHN TOWERS.

CALENDAR OF AGRICULTURE.

Turnips are sown during this month in the Eastern counties, as late sowings are thought to be less exposed to the fly. Horse and hand-hoe potatoes and Swedish turnips; the former may be earthed up and finished, and any tall weeds that rise afterwards must be pulled by hand. Scuffle deeply the stiff-bottomed turnip-lands; keep the implements closely employed, and allow not any weeds to rise. Much advantage is derived by the plants during dry weather, by scuffling the intervals of the drills; moisture is raised by the stirrings of the land, and absorbed by the leaves; the soil is pulverized and minutely divided in the particles, which is a chief cause of fertility.

The busy season of sowing turnips being over, the working of clay-fallows must be done in right earnest where wheat soils are found: plough, harrow, and roll repeatedly, and pick by hand all weeds and stones from the land, and get ready the dung and lime. Get finished any draining on cultivated lands, that the workings may be equally done.

All draining is best done on grass-lands, on which it can be neatly and cleanly performed, and the turf serves to cover the filling materials. Winter is the time to mark the position of drains, being then indicated by the falls of rain and dissolution of snows.

Use the folding of the store sheep-flock assiduously both on arable and pasture lands. Carry clovers and vetches fresh, twice a day, from the field to the yards, for soiling horses and cattle; the milch cows may be very conveniently lodged at night in yards, on artificial food. In all cases provide ample littering, as the dung will repay all cost and pains.

The latest lambs will now be weaned, and must have the best encouragement.

The hay harvest will be most generally finished this month; make and carry it with the utmost dispatch consistent with safety; have water-proof tarpaulins to lay over the rick in heavy rains, and in moderate rains suspend over the rick a light sail-cloth by means of a pulley at the ends. For getting the hay upon the rick, use a scaffold raised on four upright posts, resting below on a four-wheeled platform, and elevate and depress the scaffolding by means of pulleys; lay some loose straw on the rick for a few days; so soon as it is compressed, pull away the loose hay, dress the rick, and thatch it immediately, the straw being always in readiness for the purpose. In cases of damage, spread salt over the rick as has been directed.

In early localities the crops of peas, barley, and rye, will be ready to be cut; have carts and waggons in efficient repair, barns cleaned out, and rick stands in readiness; prepare thatch.

Look that the pasture fields have water for the cattle, and attend that no fences be broken. Do not overstock the land—rather the grass be master.

Attend to the sheep-flocks; guard against flesh flies and maggots; apply the specific remedies given.

Put mares to the stallion regularly.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

Although rather large quantities of rain have fallen in most parts of England, and we have had rather a low temperature for the time of year, the grain crops have made somewhat rapid progress towards maturity. Numerous advices, respecting the appearance of the wheats, have come to hand, and from them we learn that, taken as a whole, they are looking remarkably strong and healthy, with, consequently, every indication of a full average yield. In some of the lowland districts the blades show signs of being discoloured; but that circumstance is not calculated to have any great influence upon the grain, hence we view it in an unimportant light. It would, of course, be premature for us to offer any decided opinion as to the total yield, but present appearances are certainly most favourable. In some counties the wheat is in full ear; in others, rapidly coming into blossom; in other words, it has now arrived at the most critical stage of its growth. With all the favourable prospects before us, however, we have had considerable excitement in the corn trade, and a great advance in prices generally. Some parties have attributed the great firmness in our markets to the growers having withheld supplies of food; but such a mode of reasoning is a great error in judgment. The sole cause of the advance is the scarcity of food in France and Belgium, and the large quantities of wheat, flour, and other articles purchased off our coasts for the continent, thereby depriving us of supplies of which we stand in great need. That the consumption of food in this country is considerably in excess of the arrivals is too apparent to require any lengthened observations, and that we shall require a very large import to meet it during the whole of the present year—even though we may have a good harvest--is equally clear. When we consider the extent of our wants, and the poor prospect held out as respects foreign arrivals—for we firmly believe that future imports will be considerably less than is generally supposed, even though our markets may continue dear,—we can arrive at no other conclusion than that we shall have a high range in the value of all agricultural produce for many months, certainly till after the harvest shall have been secured. In many parts of the country the stocks of spring corn are almost wholly exhausted, and the dealers in many localities are now compelled to forward their orders to the outports, where it is now difficult to execute them, owing to the limited arrivals from abroad. As regards the supply of wheat in the hands of our growers a great difference of opinion prevails; but we may safely intimate that they are by no means so small as has been represented in several quarters. No doubt, however, they will shortly be got ready for sale, and we shall commence the new crop with an unusually small supply of old corn on hand. The rains have had a most beneficial effect upon spring corn, more especially upon barley, beans, and peas, each of which promise an unusually large crop.

Haymaking has been pretty generally commenced around the metropolis, but the quantity as yet secured is by no means large, and that in not to say first-rate order. The quantity grown is, perhaps, the largest on record; and, where the land is cleared, there is a good prospect for a heavy second-cutting. The new hay has sold at from 60s. to 90s. per load; and very little of last year's stock is now to be had at any price. The hay harvest in the northern and midland counties has scarcely commenced; but it is admitted that the quantity of grass is unusually large in almost every county.

The high value of live stock on the continent has led to heavy shipments of linseed from this country. Our market has, therefore, been bare of the article, and prices have advanced. As yet, we have had no imports from Russia, though it is understood that very large quantities will reach us from the Baltic next month.

The potato crop is looking well; and a heavy return in most parts of the United Kingdom is anticipated. Old qualities are yet to be met with in some abundance, and they are selling readily at from 45s. to 105s. per ton. From Holland, about 400 tons of new potatoes have come to hand, and the supplies of English are rapidly increasing. As yet, there are no signs of disease amongst them.

The wool trade has suddenly become heavy, owing to the great influx of wool from our colonies, and to the large stock in warehouse—56,000 bales—for the next public sales. English qualities have been certainly lower to purchase, although the growers have not been anxious sellers. The continental markets and fairs have gone off heavily, contrary to general expectation; but the fact is, the article, like cotton, has run up to a point rendering speculation in it highly dangerous. Our letters from Australia state that the growth of wool last season was a very large one, and that there was no difficulty in obtaining labour to ship it to England.

We regret to find that the crop of fruit, especially apples, is turning out very light in almost every county.

In Ireland and Scotland the corn trade has been very excited, and prices have rapidly advanced. The supplies of wheat and spring corn on offer in the leading markets have been very moderate. In the latter country much apprehension exists that the supply of turnips for next winter will turn out small, arising from the heavy rains experienced in the early part of the month having inundated the fields sown with turnip seed, a great portion of which has been lost.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that fair average supplies of home-fed stock have been on sale in the metropolitan and most of the leading country markets, the trade generally has ruled brisk and prices have had an upward tendency. The present high value of beasts and sheep has been the subject of much surprise in many quarters; but when we consider the causes which have led to the continuous activity in the demand, it will be found that ruling quotations are the legitimate result of an improving trade. In the first place, we may call attention to the unexampled prosperity of the commerce of the country, both home and foreign; and when we bear in mind that that prosperity is productive of an immense increase in the consumption of animal and other food, we arrive at the conclusion that there is every prospect of even higher prices being realized for prime stock; certainly, there are no indications of a lower range in them. A glance at the statistical tables of the outward trade of the United Kingdom must demonstrate the importance in a labour point of view—because additional employment of our artisans is sure to be followed by great activity in the cattle and corn trades, even though supplies may be tolerably abundant—of a low range of the value of money in the discount market. We ourselves are not prepared to admit that we shall this year have money as low as it was in 1852; but from the fact that the influx of gold is on a scale of great magnitude both from Australia and the United States, and that spare capital is daily becoming more abundant, we are led to the conclusion that discounts will be decidedly lower than they now are. The reduction in the minimum rate by the Bank of England, then, to 4 per cent., will have the effect of promoting increased speculation, which is sure to be followed by an increased demand for labour—the great consuming power of the country.

We have next to touch upon a matter equally important, viz., the great falling off in the imports of foreign stock. The scarcity of nearly all kinds of food in France and Belgium, and the high prices generally realized, have had the effect of drawing large numbers of beasts, sheep, and calves from Holland and Spain, which, in the absence of any demand for the former countries, would, no doubt, have found their way hither. Although France at the present time is importing more than twice the amount of supply forwarded to this country, meat in Paris, as well as in the whole of the departments, is considerably higher in price than in London; indeed, in some districts it is now regarded as a luxury only to be purchased by the rich. The question is, how long is this state of things to continue? France, it is generally admitted, is rapidly becoming rich; with her improved position, there is a great demand for the first necessaries of life, which it appears almost impossible to meet. The same causes are in operation here; and until they cease, we shall look in vain for any fall in the price of live stock.

Some contemporary prints have denounced the agricultural body as the sole cause of the present high prices, and have been most unsparing in their censures of the speculative class, who, we are informed, have made it a point to buy up large quantities of stock in the metropolitan market, to the great injury of the consumers. A greater fallacy could scarcely be broached. As practical men, we know that speculation has been carried on for many years; but is it to be supposed for a moment that beasts or sheep purchased on a particular day in a local market are not again offered for sale, and at, too, the earliest possible moment? We have had from time to time large operations in corn for a rise; but a distinct line must be drawn between corn and cattle. The former entails so much expense for warehouse room, about 2s. per last per month; but cattle must be fed and placed in safe keeping; besides, it frequently deteriorates in value several pounds per head in a few weeks, owing to the change of food, and is liable to disease. Depend upon it, there is as much lost as gained in cattle, and to assume that it has had the effect of making dear markets is an assumption not warranted by facts.

The increased, nay most abundant, supply of food in the pastures may have kept back a portion of the stock destined for London; but it must be understood that we are between the eastern and northern "seasons," that is to say, the arrivals from Norfolk and Suffolk are now about to cease and those from Lincolnshire to commence. It is a most fortunate circumstance for our graziers that natural food has become plentiful, as in many parts of the country the winter's supply had been wholly exhausted.

The Great Exhibition of Live Stock in Paris is likely to exercise great influence upon the rearing of stock in France, as well as in some parts of Germany, and it is possible that it will increase the demand for linseed and rapeseed for fattening purposes.

In the month just concluded very large supplies of those articles have been shipped from the port of London, leaving us comparatively bare of stock, and our feeders chiefly dependent upon supplies which may arrive from India. No doubt the imports from Russia will be large towards the end of August, but very large arrivals will be necessary to keep down prices.

In the Great Metropolitan Market beef and mutton have advanced fully 4d. per 8lbs.; but lamb has gone rather lower compared with the previous month. No material change has taken place in the value of either veal or pork.

Although the arrivals of foreign stock have been larger than in May, the total supply has been very moderate for the time of year, as will be seen on reference to the following figures:—

IMPORTS INTO LONDON LAST MONTH.—Beasts, 1,169; sheep, 6,792; lambs, 934; calves, 1,195; pigs, 46—Total, 10,136 head.

IMPORTS AT CORRESPONDING PERIODS.

	June, 1853.	June, 1854.	June, 1855.
Beasts	2,293	2,657	2,061
Sheep	10,529	9,873	7,542
Lambs	1,233	575	336
Calves	2,621	2,113	1,529
Pigs	191	995	65

The total supplies of stock exhibited in the Metropolitan Market have been as follows:—beasts, 17,896; cows, 600; sheep and lambs, 112,110; calves, 1,839; pigs, 2,740.

SUPPLIES AT CORRESPONDING PERIODS.

	June, 1853.	June, 1854.	June, 1855.
Beasts	20,137	18,921	19,173
Sheep and Lambs	130,500	131,660	125,570
Calves	3,328	2,919	2,209
Pigs	2,565	2,670	3,180

Of the supplies of beasts shown last month, 8,500 were derived from Norfolk, Suffolk, Essex, and Cambridgeshire in good condition, considering the close of the season; 3,000 from other parts of England; 1,568 from Scotland; and only 235 from Ireland. Beef has sold at from 3s. 6d. to 5s. 4d.; mutton, 3s. 10d. to 5s. 6d. out of the wool, and up to 6s. in the wool; lamb, 4s. 10d. to 5s. 10d.; veal, 4s. to 5s. 4d.; and pork, 3s. 4d. to 4s. 10d. per 8lbs. to sink the offal.

Newgate and Leadenhall have been very scantily supplied, and the trade generally has ruled firm. The following rates were paid in the last week of the month:—Beef, from 3s. 2d. to 4s. 10d.; mutton, 3s. 6d. to 5s.; lamb, 4s. 6d. to 5s. 6d.; veal, 3s. 8d. to 5s.; pork, 3s. 4d. to 4s. 8d. per 8lb. by the carcass.

NORTH OXFORDSHIRE.

Now that we have used up all our odd ends and pieces of peace rejoicings, let us for a moment raise the veil of futurity, and possibly that is best done by glancing at the past. The autumnal seed-time was most favourable, and so also has been the spring for thorough tilling and cleaning the land, and for spring sowing generally; and, thanks to the tact and industry of our agricultural brethren, such golden opportunities did not pass by unheeded or unimproved; indeed it may be truly said that not an hour was neglected or uselessly employed: the consequence is, the wheat crops are looking most luxurious, and decidedly in favour of the thin sower. In adjoining fields the same soil and equally well cultivated may be seen specimens of thick and thin sowing—all in favour of the latter practice; and heavy bets are offered that at next thrashing time he who sowed but three pecks of wheat to the acre will exceed in yield by at least eight bushels his neighbour who sowed three bushels. On those farms where over much seed has been put in it is weak and spindly, and probably the first heavy rain will beat it flat to the ground; but, on the whole, the wheat plant is vigorous, healthy, and highly satisfactory. The barley also (now coming into ear) is bidding up for a full average yield, although in a few isolated cases it cannot be so well spoken of; yet, on the whole, an average may be reckoned on. Beans are splendid, well grown, and luxuriantly blossomed. As to grass, clover, and seeds, the crops are unusually heavy, and the merry ring of the scythe is heard everywhere; and should we be favoured with genial weather, the in-gathering of vast quantities of superior hay will be an affair of every-day occurrence. The potato crop up to this date is very promising, it having hitherto escaped the frost and the blight, and the tubers are growing amain. To-day, June 19, a heavy thunder shower; the lightning has killed some sheep and poultry, and set fire to a straw-rick, &c., &c.

SUFFOLK.

Although the third week in June is nearly over, with but few exceptions the ears of wheat are not yet plainly visible from the road. This does not look like an early harvest, but from the appearance the crop now presents we may expect an abundant one. The straw at present does not appear long, but if the present weather (frequent light showers) continue, we may expect a bulky if not a productive crop. Barleys are growing fast, look a healthy colour and stout, and are much stiffer in the straw than last year. The pea crop never looked perhaps more promising—stout in the straw, plenty of bloom, and a good colour—but from the many diseases, attacks from insects, &c., that this crop is subject to, present appearance is a very uncertain guide to the yield when threshed. Beans are not long or rank in the stalks, but are bloomed from top to bottom. Although the weather has not been propitious, many have begun to cut their early grasses and mixed layers, but the clovers do not, when cut, fulfil the expectations formed from a hasty inspection without examination; they are mostly good plants, but not long or stout. Meadow hay will be a great crop, of good quality of grass. Turnip sowing has commenced, and as far as the early-sown swedes will enable us to judge, this year promises to be as bad for the turnip-fly as last: many have been ploughed up and sown again. Beet-roots are looking well, and few complain of a missed plant anywhere.—June 19.

BEDFORDSHIRE.

Since we last addressed you, there have been great changes in the character of the weather, and in the prospects of the approaching harvest. Here rain was much wanted, and great fears were expressed that our crops of hay, like those of last year, would be extremely light. On the 13th of last month, however, we had twelve hours of fine rain; and rain fell in larger or smaller quantities each day until the commencement of June. Although such prolonged wet seriously impeded the proper cleansing of the land intended for turnips, and has compelled some farmers to sow that bulb in land indifferently prepared, its benefits have proved enormous to the crops of every kind. Our grazing fields never threw up more abundant or sweeter herbage; our meadows never yielded to the scythe more splendid crops. The clovers, too, where well planted, are most luxurious, and fine weather now alone is wanting to secure ample forage for the ensuing winter. We can now speak with some approach to accuracy of the appearance of our corn crops. The wheat, as a whole, looks promising—certainly nothing gigantic or uncommon; but at present there is nothing to lead us to fear a bad or indifferent produce. Yesterday, for the first time this season, did we perceive an ear fully out. We cannot speak so well of the barley crops. The quantity sown in this county is much less than usual, and its appearance in many places is extremely bad. On fine dry loams, sands, and gravels it is, however, luxurious. If no better statement can be made in other counties of the prospects of this crop than would justly apply to our own, we should draw this inference, that malting barley will be found next season to be extremely scarce, and consequently very dear. Beans and peas are excellent at present; no appearance of fly. The mangel-wurzel appears to have been successful (so far as obtaining a good plant) in most instances, and a great breadth of this valuable root has been sown. Many of our farmers, anxious to lose neither time nor opportunity, sowed their swedes in the month of May. These were nearly all destroyed by the fly, soon after they came up; whilst those whose patience permitted them to wait until June have been very successful in retaining their plant, and the fine showers which we have had recently will, we hope, secure the crop. Potatoes, though not very extensively cultivated in this county, look extremely well, and no appearance of disease has yet been seen. Each week and each market that we attend confirms us in the conviction that never on the longest day, for very many years, was there so little wheat remaining in the growers' hands. We may find enough to carry us through until another harvest is secured: and should it prove a dry one, and the wheat be well secured, all may be well; but should the contrary be the case, the consequences will be serious. We scarcely need add that the prices of meat are high, and likely to be so. Wool, on the contrary, seems to be just now but little inquired for. You will say that, upon the whole, we draw a satisfactory picture of the state of farmers in Bedfordshire. Such was our intention; and we see all around us ample evidence of that healthy and renewed exertion which always should, and generally does, follow success. Man has here done much, and a kind Providence seems, so far, to second his endeavours: but the destiny is still in His hand—floods, "blasting, mildew, and caterpillar" may yet be the messengers of His wrath; and all that remains for us now, is to abide the issue in humble and confiding trust.—June 20.

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF JUNE.

The month of June till the close, was less summer-like than the backward state of the crops made desirable, though its temperature equalled the average of seasons. Harvest may yet be late; but the general appearance is favourable. Several early localities have shown wheat-ears for the last ten days, and a moderate exhibition of them is now more generally seen; and with a favourable bloom and plenty of sun, a bountiful crop is likely to be gathered. The thin pieces, on the light lands, have greatly improved; but where thick seeding and high farming have obtained on first-rate soils, there is some little danger of over-luxuriance. Spring corn is decidedly promising. Beans and peas especially have exhibited an abundance of blossom, which has been followed by healthy and well-filled pods without the fly; and there is plenty of this grain in prospect. The tone of the markets, however, has become entirely changed; the last month presenting quite a contrast to its two predecessors, by establishing a rise of 7s. to 8s. on wheat, so that prices are again nearly brought to the war point, from which they fell at the commencement of the year. The reduction that ensued upon the establishment of peace was to be expected, and those who, like ourselves, believed in the universal slenderness of stocks, anticipated the recurrence of higher rates before harvest, as the consequence of diminished supplies. As respects the power of America to fill up the European void, it turns out that the lowest calculation was too high. Some writers indulged in the prospect of nine million quarters of surplus—the most sober were confident of its reaching to three millions—and if we take the past rate of supply since September as our guide up to September next, the sum total will not amount to two millions and a-half; about half of which will have been received by the United Kingdom. Mr. Caird's estimate, therefore, that one million quarters would suffice for British wants is now proved to be erroneous; for all our markets, with two months to provide for, still cry "Give! give!"

The inundations in France have greatly contributed to the late upward movement, and their effects are likely for a time to sustain it, by the constant drain that will probably be made on our slender resources; and as similar weather has obtained in Spain (a country on which we have been in the habit of relying for considerable supplies), no contributions from Italy, the Danube, or Baltic, as auxiliaries to those from America, are likely to be so excessive as to permit any considerable accumulation either in London or other British ports. In Spain itself, at Santander, millers have been selling flour for *August* delivery at 56s. 7d. per sack, and in Paris as high as equal to 67s. has been paid for good quality; while at New York the very finest is still worth 41s. per brl. (or 58s. 6d. per sack), though for that made from sprouted inferior wheat from the west as low as 19s. 9d. per brl. (or 28s. 2d. per sack) has been taken; the best English country flour being at the same time 58s. per sack, and the top price of town-made 68s. per sack.

While the Peace has induced farmers to send more liberally to market than they were wont, the lower rates occasioned by this course have diminished foreign arrivals at a rate much beyond the English increase; and as these English supplies were excessive, there is now a sudden deficiency experienced in several country markets. Fine quality English wheat has become quite scarce, and this scarcity has made a free draught upon second-rate foreign in granary; and even the lower kinds have found a fair country demand, from the consideration of price. Cargoes on the coast have been caught up with avidity at increased rates, many having found a foreign destination: Belgium frequently competing with France for their placement; whilst both countries together have taken off 6,850 qrs. from the Port of London alone, during the last four weeks, or nearly one-fourth of the home supply.

The first Monday commenced with a fair supply of English wheat, and a small one of foreign; nearly half of which, however, was of a serviceable kind, from the Baltic. Higher rates were at first demanded, but it was found impossible to obtain any advance on the prices of the preceding Monday, and even then trade was slow, though some inquiry existed for the continent. The tendency of the country markets through the week was upward, in which London rather participated; Hull, from an exceedingly short supply, established an improvement of 2s. per qr.; Liverpool rose 1s. to 1s. 6d. per qr.; and Norwich, Newcastle, and some other Saturday markets, were still beyond these rates.

The second Monday showed smaller arrivals, both English and foreign, with increased exports; and on the back of country advices of a stimulating kind, Essex and Kentish factors readily obtained 2s. to 3s. more money, nothing being left over; while foreign was nearly as much dearer, in consequence of a somewhat extensive demand. The advices from town further influenced provincial markets. Liverpool rates increased 1s. to 2s. per qr. Hull was again advanced 2s. to 3s.; while Newcastle and Uxbridge quoted the rise 4s. per qr. At Edinburgh the same advance was obtained, from the slender show at market, and Ireland slowly followed Great Britain.

On the third Monday, supplies continuing short, though the weather was splendid, the London prices received a further bonus of 2s. per qr.; but the advance was rather reluctantly paid, and business only proceeded at a slow pace. Liverpool did not fully respond to this movement; but Hull, Birmingham, Bristol, Stockton-on-Tees, and Gainsborough went beyond it, the latter two towns making the rise 2s. on inferior, and 4s. per qr. on fine qualities; and London, without the least activity in sales (some of the Monday's supply being undisposed of), indicated a further improvement.

The fourth Monday was partly furnished by left-over samples, together with a very short supply from the near counties. At the Kentish stands only 2s. was obtained over the previous rates; but Essex factors made the rise 3s., though the movement was not very active. Foreign was also 2s. dearer, and floating cargoes held at 3s. more. This last rise has been pretty generally supported in the country, though the week finished rather heavily from the forcing weather then prevalent.

The four weeks' supply into the port of London has been—in English 29,383 qrs., which is about 2,000 qrs. below last month; while the foreign has only been about a similar quantity, viz., 29,774 qrs., or 16,200 less than in May. The foreign supply for the kingdom for the month has exceeded the last by about 9,000 qrs., being 224,047 qrs.; but against this the exports must be placed, which have quintupled in the port of London, having reached as before stated 6,850 qrs., against 1,218 in May. Since 1st Jan. to 30th May the total imports into the United Kingdom have been 1,130,960 qrs. wheat and 1,160,777 cwts. of flour.

The country supplies of flour have been fair, but still show a falling off of about 2,600 sacks, being 58,233 sacks; the foreign has also been less, that in sacks being 9,840, and in barrels 21,486, making a decrease of about 4,000 barrels for June. The price of country flour has been moving every week steadily upward, till the month's improvement has equalled 7s. to 8s. per sack. Spanish has risen 5s., and American barrels 3s. to 4s. The first Monday made a rise of only 1s. per sack, the second of 2s. to 3s., the third and fourth of 2s. each; foreign not following at equal pace, because not formerly so depressed; town millers raising the top price to 67s., and during the remainder of the last week 1s. further advance per sack has taken place on all sorts.

Barley, from its great scarcity, has been equally affected upwards. The four weeks' supply of English, in London, only amounted to 4,522 qrs., and the foreign to 14,599; thus making a deficiency upon the previous month's short supply of about 6,000 qrs. Of this foreign supply, the chief part arriving on the first Monday of the month, the market had a downward look, though we did not hear of lower prices being submitted to, as there was next to nothing in granary; but such a falling off took place on the second Monday that a rise of 1s. 6d. immediately ensued, and fully 1s. more has been realized each Monday since, making the advance 4s. per qr. in all; thus fully recovering the depression of May, occasioned by the cessation of malting. A demand having sprung up for this grain, for human food, in the Baltic, in consequence of the high prices paid for rye, there seems no chance at present of a serious fall; but doubtless the consumption will be reduced, and the free importations of maize, which is cheaper, are likely to check any further material enhancement; the foreign imports this year to 31st May were only 1,925 qrs. against double this quantity last year. Though the season for the malt trade has ceased, holders having generally speculated on a recovery of half the duty in consequence of peace, so little has been on offer, that the fourth Monday noted an advance of 2s. per qr., there being no previous alteration.

The oat trade has been in the same predicament as to supplies, and after a long and unreasonable period of depression, has become of interest, an advance of fully 3s. having been effected during the month. The quantity of foreign received in London during four weeks has been only 53,205 qrs., with Irish still more reduced, viz., to 9,740, and British only 5,817 qrs., in all 68,762, or 17,200 only per week, against 26,600 weekly in May. Half this foreign supply arrived on the first Monday, which still established an advance of 6d. per qr. The next Monday being very deficient, another 1s. was obtained; from the same cause, the third Monday enabled holders to sell at 1s. more; and the fourth, with remaining scarcity, though checked by the limitation of business through the rapid advance, added another 6d. to the then high prices. Buyers were, however, looking on to the expected arrivals from Archangel, and the recent stimulus to ship from Holland and the Baltic may change the face of trade again, though the former low rates this side harvest seem improbable.

Beans and peas, more from change of opinion than any extensive consumptive demand, have also materially altered in value. Foreign supplies of beans have been fair; but the temporary failure of Egyptian shipments from the clearing and deepening of the Mahmoudieh canal, as well as the subsequent failure of the waters of the Nile, now that the passage is clear, have encouraged holders to insist on higher terms. The supply of foreign beans for four weeks was 10,345 qrs., with 2,519 qrs. English. The rise did not obtain till the third Monday, and consisted of 1s. per qr., which was repeated on the following Monday. As to peas, the weekly supplies have nearly disappeared—the whole month presenting the scanty figures 211 qrs.! Holders have therefore insisted on their own terms from necessitous buyers; and we have heard that from the point of depression to which foreign white peas were reduced, there has been a total rise of 15s. per qr.; the same peas that were recently bought at 33s. per qr. being since sold as boilers at 48s. per qr. Hog peas are also 3s. to 4s. dearer—the advance being supported by the relative higher rates of barley. But as the crops of beans and peas are more promising than most grain, a long continuance of high rates seems unlikely.

In linseed so large an export trade has obtained, that prices have not receded, though it is known there is an accumulation of stock in Russian ports, sufficient time not being afforded for their expedition onward; and the very large consumption for cakes, in consequence of the failure of cattle feed, keeping the crushers full of orders. Indeed, the stock of cake is so close up, that more money is made on sales to needy buyers, and linseed itself closed 2s. to 3s. higher.

Very little change has taken place in the smaller seeds—stocks of cloverseed and trefoil being too limited, as well as too firmly held, for much business. The promise is not reported to be very good for seed, in consequence of the quantity of rain this season, and the patches made by the severe weather in winter are said not to be well filled up, though the young plants of this season are reported to be doing well. Canary-seed is rather firmer than of late. White mustard has remained in neglect. Hempseed, rapeseed, Coriander-seed, and Carraway-seed, much as quoted last month.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter

WHEAT, Essex and Kent, white, new	69 to	79	extra —		83
Ditto, red, new	69	73	,, —		80
Norfolk, Linc. and Yorksh., red, new	67	72	,, —		77
BARLEY, malting, new	41	43	Chevalier	43	45
Distilling	38	41	Grinding	36	39
MALT, Essex, Norfolk, and Suffolk	75	77	extra		83
Kingston, Ware, and town made	75	77	,,		83
Brown	67	70	,,		—
RYE	—	—		—	40
OATS, English feed	25	27	Potato	26	29
Scotch feed	27	29	Potato	28	30
Irish feed, white	24	25	fine		27
Ditto, black	22	23	,,		25
BEANS, Mazagan				38	40
Ticks				37	40
Harrow				39	42
Pigeon				42	46
PEAS, white boilers	44	49	Maple 42 44 Grey	38	40
FLOUR, per sk. of 280 lbs., Town, Households 63s., fine				66	69
Country	54s.	55s.	Households	56	59
Norfolk and Suffolk, ex-ship	—	—		53	54

FOREIGN GRAIN.

Shillings per Quarter

WHEAT, Dantzic, mixed	86 to	88	high mixed —	86	extra 92
Konigsberg	84	86	,, —	87	,, 88
Rostock, new	78	79	fine	82	,, 90
American, white	70	76	red	66	70
Pomera., Meckbg., and Uckermk., red	80	81	extra	75	84
Silesian ,,	74	76	white	78	80
Danish and Holstein ,,	64	68	,,	66	70
Odessa, St. Petersburg and Riga	62	64	fine	66	68
Rhine and Belgium ,,	—	—	old	—	—
Russian			French	none	
BARLEY, grinding	33	37	Distilling	37	39
OATS, Dutch, brew, and Polands	27s. to	29s.	Feed	23	26
Danish & Swedish feed	23s. to	26s.	Stralsund	26	28
BEANS, Friesland and Holstein				38	39
Konigsberg	37	40	Egyptian	31	32
PEAS, feeding	38	40	fine boilers	44	48
INDIAN CORN, white	32	33	yellow	32	34
FLOUR, French, per sack	—	—	Spanish	59	60
American, sour, per barrel (nominal)	36	38	sweet	39	42

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

	Wheat.		Barley.		Oats.		Rye.		Beans		Peas.	
WEEK ENDING:	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
May 10, 1856..	67	7	40	3	23	10	43	7	41	3	38	5
May 17, 1856..	68	9	40	0	23	5	41	4	41	7	39	11
May 24, 1856..	69	2	39	6	23	10	47	6	41	6	38	8
May 31, 1856..	68	2	38	11	23	10	42	4	42	2	39	11
June 7, 1856..	67	9	38	7	24	3	42	10	42	8	39	9
June 14, 1856..	68	1	38	6	24	3	47	9	43	5	40	11
Aggregate average of last six weeks	68	3	39	4	23	11	44	3	42	1	39	7
Comparative avge. same time last year	76	5	33	0	28	1	44	6	45	3	41	9
DUTIES........	1	0	1	0	1	0	1	0	1	0	1	0

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red, (per cwt.)	—s. to —s.
Ditto white....................	—s. to —s.
Trefoil, (per cwt.)....................	—s. to —s.
Tares, winter (per bushel)............	7s. 6d. to 8s. 0d.
Coriander (per cwt.)	20s. to 24s.
Carraway (per cwt.).... new —s. to 50s., old	—s. to —s.
Canary (per qr.).........................	58s. to 60s.
Hempseed (none)	—s. to —s.
Linseed (p. qr.) sowing —s. to 63s., crushing	56s. to 58s.
Linseed Cakes (per ton)..........	£13 0s. to £13 10s.
Rapeseed (per qr.)	new 88s. to 90s.
Ditto Cake (per ton)	£6 10s. to £7 0s.

FOREIGN SEEDS, &c.

Cloverseed, red, French	—s. to —s.
Ditto, white, Dutch	—s. to —s.
Tares, (per bushel)..................	4s. 6d. to 5s. 0d.
Hempseed, small, (per qr.) —s. 56s., Ditto Dutch,	56s.
Coriander (per cwt.)	15s. to 20s.
Carraway	42s. to 46s.
Linseed (pr qr.) Baltic, 53s. to 54s.; Bombay,	50s. to 54s.
Linseed Cake (per ton)........	£12 10s. to £13 10s.
Rapeseed, Dutch	87s. to 88s.
Rape Cake (per ton)..............	£6 10s. to £7 0s.

HOP MARKET.

BOROUGH, MONDAY, June 23.

The accounts from the plantations during the past week have continued unfavourable.

POTATO MARKETS.

SOUTHWARK, WATERSIDE.

MONDAY, June 23.

The arrivals during the past week have been larger than for some weeks past, and with a continuance of mild weather, together with a liberal supply of new potatoes from the continent, have been more than sufficient for the limited demand.

BOROUGH AND SPITALFIELDS.

MONDAY, JUNE 23.

Since Monday last very moderate supplies of old Potatoes have come to hand, coastwise and by railway. For most kinds the demand is inactive. Yet prices are well supported. York Regents, 85s. to 105s.; Kent and Essex do., 70s. to 85s.; Scotch, do., 60s. to 75s.; Cups, 50s. to 60s.; Middlings, 35s. to 40s.; Lincolns, 60s. to 70s.; Blues, 50s. to 60s. per ton. The imports of potatoes have been 13,778 baskets from Rotterdam, which have sold at 5s. to 5s. 6d. per basket. New English are worth 10s. to 12s. per cwt.

PRICES OF BUTTER, CHEESE, HAMS, &c.

Butter, per cwt.	*s.*	*s.*	*Cheese, per cwt.*	*s.*	*s.*
Friesland	90 *to*	98	*Cheshire*	70 *to*	84
Kiel............	98	106	*Chedder*	74	86
Dorset	104	108	*Double Glou., old*	72	80
Carlow	—	—	*New do.*	62	68
Waterford	—	—	*Hams, York, new*	84	92
Cork, new	98	106	*Westmoreland*...	80	84
Limerick	90	92	*Irish*	80	90
Sligo	90	100	*Bacon, Wilts., dried*..	80	86
Fresh, per doz.	12s. 0d.	13s. 0d.	*Irish, green*....	72	78

WOOL MARKETS.

BRITISH WOOL MARKET.

	s.	d.		s.	d.
Down tegs............	1	5	to	0	0
Do. ewes..............	1	5	—	0	0
Half-bred hoggets	1	4	—	0	0
Half-bred wethers	1	3	—	0	0
Long Leicestershire	1	3	—	1	3½
Combing skins	1	1½	—	1	4½
Flannel wools	0	9	—	1	3
Blanket wools	1	2	—	1	5

DONCASTER WOOL MARKET, (Saturday last.)—Nearly five hundred sheets of wool were shown to-day, being a good supply for the second market. Prices ranged very similar to last week, anything of extra quality commanding a preference, whilst the heavier class of wool, having a large proportion of ewes and wethers, was slow sale. The following are about the quotations :—ewes and wethers, 16s. to 16s. 6d.; Lincolnshire (one third) hog, 16s. 6d. to 17s. 6d.; ditto one-half to two-thirds, 17s. 6d. to 18s. 3d. per 14¼lb.

LEEDS WOOL MARKET, June 20.—There has not been any material increase in the sales of wool this week, and prices are quoted at last week's rates.

SELBY WOOL MARKET.—Buyers were more numerous, but prices showed a decline of from 1s. to 1s. 6d. per stone.

YORK WOOL MARKET, June 19.—A fair supply of wool, which had moderate demand. Super clean-washed hog fleeces, 15½d. to 15¾d. per lb., or 18s. 1d. to 18s. 4½d. per stone; half-hog and ewe, 14½d. to 14¾d. per lb., or 16s. 11d. to 17s. 2½d. per stone; ewe, Masham, Cheviot, and Southdown, 13½d. to 13¾d. per lb., cr 15s. 9d to 16s. 0½d. per stone. Cotted fleeces, 11d. to 12d.; locks, 9d. to 10d. per lb.

LIVERPOOL WOOL MARKET, JUNE 21.

SCOTCH WOOL.—In home descriptions transactions continue unimportant, and a stand seems to have been come to, buyers feeling no confidence to operate freely ; while, on the other hand, growers seem more inclined to hold back their Wools than to sell freely at present rates. But as consumers are lightly stocked, it is not supposed this state of things can last long.

	s.	*d.*		*s.*	*d.*
Laid Highland Wool, per 24lbs. ..	12	9	*to*	14	0
White Highland do.	14	6		16	0
Laid Crossed do.. unwashed	14	6		15	6
Do. do.. washed	15	6		16	6
Laid Cheviot do.. unwashed	16	0		17	6
Do. do.. washed	18	9		22	0
White Cheviot do. do	30	0		32	0

FOREIGN WOOL.—There has not been much doing in foreign, the market offering very little choice, beyond what is held for the public sales next week.

FOREIGN WOOL MARKETS.

LEEDS FOREIGN WOOL MARKET, June 20.—There is scarcely any new feature to report in the demand. There may be, on the whole, a slight improvement; but the high prices of Australian wool present no inducement to the manufacturer to purchase beyond his immediate wants. In East Indian and other wools adapted for blankets, there is very little demand; but in Russian or Turkey wools adapted for carding or combing, sales may be readily effected.

LANDSBERG WOOL FAIR.—LANDSBERG, JUNE 11.—The wool fair began yesterday morning, the 10th instant, as last year. The same quantity of wool, namely, about 5,000 to 6,000 cwt. was offered for sale. The condition of the wools is good. We observed here yesterday the same quietness and dulness as in the Breslau fair. Several of the old buyers had not come, and altogether the fair appears lifeless. To-day a little more inclination is shown on the part of the buyers, and those sellers who will take reasonable prices can sell. The fine clothing wools were bought at about last year's prices, whilst combing wools, middle quality, fetched about five dollars above last year's prices. About two-thirds of the quantity were sold up to to-night.—*Leeds Mercury.*

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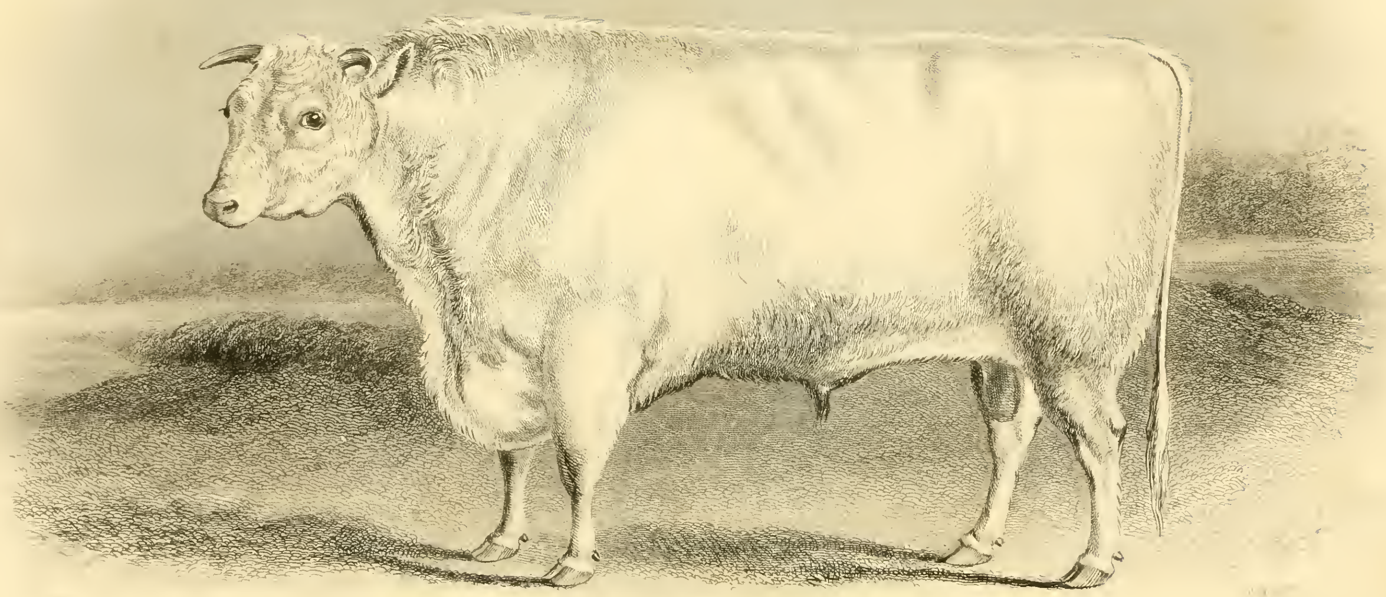

Windsor.

A Short Horn Bull

The Property of Richard Booth Esq. of Warlaby, Northallerton, Yorkshire, to which the [illegible]

of £30 was awarded at the [illegible] of [illegible] Meeting at [illegible]

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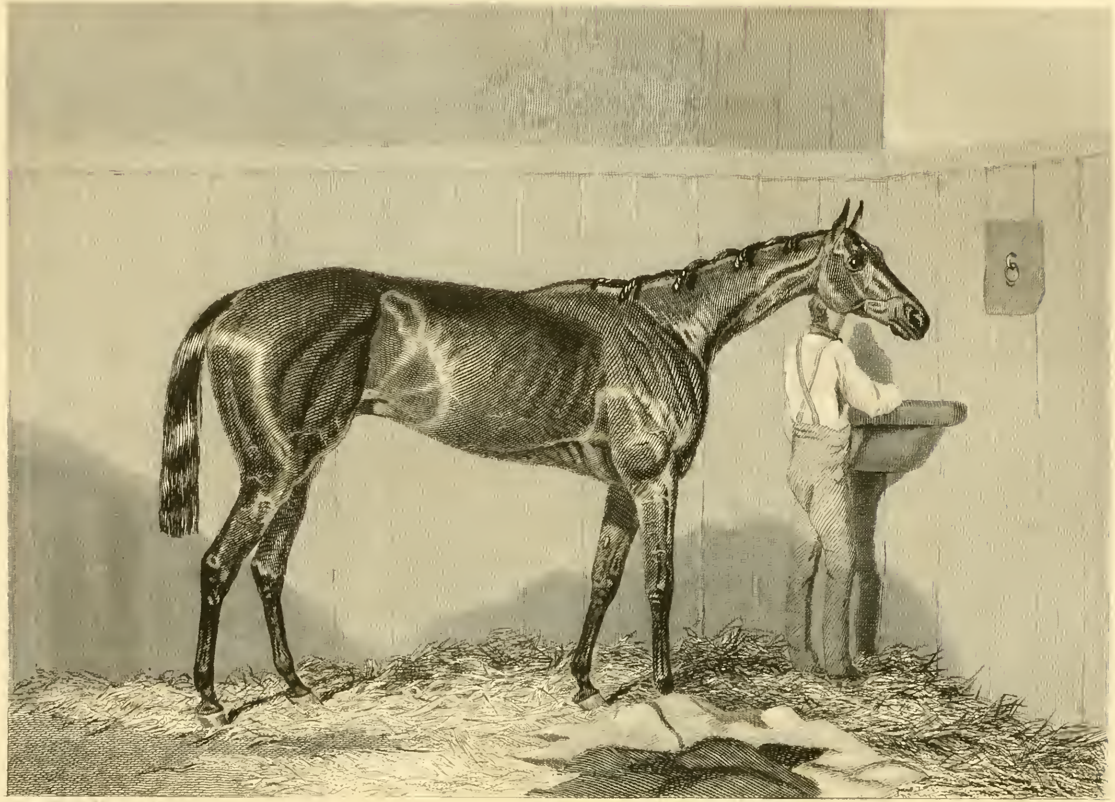

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MARCHIONESS

Winner of the Oaks 1855

[illegible]

THE FARMER'S MAGAZINE.

AUGUST, 1856.

PLATE I.

WINDSOR; A SHORT-HORN BULL.

BRED BY AND THE PROPERTY OF RICHARD BOOTH, ESQ., OF WARLABY, NEAR NORTHALLERTON.

White, calved October 1, 1851; got by Crown Prince (10087), dam (Plum Blossom) by Buckingham (3239), g. d. (Hawthorn Blossom) by Leonard (4210), g. g. d. (Blossom 3rd) by Young Red Rover (4905), g. g. g. d. (Blossom) by Pilot (496), g. g. g. g. d. (Twin Cow) by Albion (14).

PERFORMANCES.

In 1852, at the meeting of the Yorkshire Agricultural Society at Sheffield, took the First Prize as a Bull Calf.

At Sunderland and Durham County, First Prize as a Bull Calf.

In 1853, at the meeting of the Royal Agricultural Society of England at Gloucester, First Prize as a Yearling Bull.

At the meeting of the Yorkshire Agricultural Society at York, First Prize.

At the meeting of the North Lancashire Agricultural Society at Blackburn, First Prize; also a Silver Cup value ten guineas, and the Society's Silver Medal, for the best male animal in the show-yard.

In 1854, at the meeting of the Royal Agricultural Society at Lincoln, Second Prize in the All-aged Class.

At the meeting of the Highland Agricultural Society at Berwick-upon-Tweed, First Frize in the Aged Class.

At the meeting of the Royal Agricultural Improvement Society of Ireland at Armagh, First Prize.

In 1855, at the meeting of the Royal Agricultural Society at Carlisle, First Prize in the Aged Class.

At the meeting of the Yorkshire Agricultural Society at Malton, First Prize in the Aged Class.

The above are the only times he has ever been exhibited.

Windsor is a splendid animal, having all his proportions in good outline; he is very cylindrical in form, or if anything of better than cylindrical form, being deeper in frame than in circumference. His head is rather plain, and horns wide, but his eye is fine; his back is admirably formed, level and broad throughout; his chest is full, and breast prominent; his shoulder and ribs well out; full plait, deep flank, long rump, and thigh deep; twist very good.

PLATE II.

MARCHIONESS; WINNER OF THE OAKS, 1855.

Marchioness, bred by Mr. Stanhope Hawke, in 1852, is by Melbourne out of Cinizelli, by Touchstone; her dam Brocard, by Pantaloon; Bombazine, by Thunderbolt.

Melbourne, bred by the late Mr. H. Robinson, in 1834, is by Humphrey Clinker out of a Cervantes mare. A good honest race-horse, he has appeared to still more advantage in the stud, being the sire, amongst others, of Derby, Oaks, and St. Leger winners.

Cinizelli, bred by Lord Westminster in 1842, was put to the stud in 1846, her produce so far including but Towton and Womersley.

Marchioness is a bay mare; rather peculiar in colour, being here and there what stablemen call a little "mousey." She stands fifteen hands three inches high; has a lean bloodlike head, small ears, rather a straight neck, and good shoulders. She has a fair back and barrel, with good depth of girth, wide hips, fine quarters, strong arms, hocks, and knees, good bone, and "as sound as a bell." She has no white beyond a star in the forehead, and is altogether by no means a "catchy" or striking-looking mare.

FISH MANURE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

Those who witnessed, in the week of the Chelmsford meeting, the farming of Essex, must have noticed more than one object for their serious consideration—its finely cultivated wheat and bean soils; the extensive clay-burning system of the Roothings; the fine rich seed-producing soils of the hundreds of Dengy and Rochford; the skilful use of chalk and marl; the extensive application of sprats, five-fingers, &c., to their oat-lands, besides other things which the cultivators of this county not only extensively, but well accomplish.

Some years have now elapsed since I dwelt amidst these excellent and warm-hearted yeomanry, but I have ever retained the impression that many of their practices might be profitably followed in other districts. Let me instance what I named the last—their employment of the sprats and other fish of what is called the stow-boat fishery. Now these fish were extensively employed as a manure by the farmers of the coast of Essex long before guano was introduced into this country: they had found out the value of such a dressing to their soils many years before the word "nitrogenous" had made its appearance in the vocabulary of agriculture. As there is some little chance that the guano of the Pacific Ocean is not so inexhaustible as was once believed, and as such a suspicion is rather supported by a late considerable advance in the price of the best Peruvian, it may not perhaps, under such circumstances, be a profitless task if we inquire a little into the chemical composition of the fish manure of the East of England, and, as guano is also the refuse or undigested matters of fish, to compare their fertilizing powers. It is true, if fish are to be thus employed more than a few miles from the shore, that then they must be prepared in some way for the conveyance—must be rendered more portable; but if the farmers of Essex find a dressing of some 40 bushels of sprats per acre to be an excellent application, then surely some economical preparation of these fish, as, for instance, by the mere reduction of the amount of their watery portion by gentle evaporation, might render them available in far more inland districts. Let us note the composition of these fish, and of Peruvian guano. The first was analyzed by Professor Way (*Jour. Roy. Ag. Soc.*, vol. x, p. 611), the Peruvian guano by Professor Anderson (*Trans. High. Soc.*, 1855, p. 56). Now these chemists found in 100 parts of these manures—

	Sprats.
Water	64.60
Oil	19.50
Dry nitrogenous matter	15.90

When burnt, 100 parts of these fish yielded 2.12 per cent. of ash, which contained, in 100 parts—

Phosphoric acid	43.52
Lime	23.57
Magnesia	3.01
Potash	17.23
Soda	1.19
Common salt	11.19

The Peruvian guano contained, in 100 parts—

Water	10.54
Organic matter and ammoniacal salts	21.68
Phosphates	46 20
Alkaline salts	18.31
Sand	3.27

The reader will notice that in the sprats more than one-third is composed of rich organic matters, and about two-thirds are water. The Essex farmers, then, when they apply about a ton of fish per acre, really apply only about 7 cwt. of solid manure; and this, for certain crops, they find fully as efficacious, if not more so, than say 3 or 4 cwt. of guano. When ploughed for oats on certain soils, it produces, in favourable seasons, at least the same exuberant growth—the same dark green which results from an application of guano. And they agree in another point, for they both, as the farmers say, "work best" in moist seasons. There is no doubt, then, of the value of these fish as a manure, and some not unsuccessful attempts have recently been made to reduce fish refuse to a fine powder, capable of being applied by the drill without injuring the fertilizing properties of the manure. A specimen of one of these was lately analyzed by Dr. Anderson (*Trans. High. Soc.*, 1856, p. 281); it is described by him to have been in the form of a yellowish powder, in grains about the size of fine oatmeal, remarkably uniform in appearance, very dry, and almost devoid of smell. Its composition was—

Water	8.00
Fatty matter	7.20
Nitrogenous organic matter	71.46
Phosphate of lime	8.70
Alkaline salts	3.80
Silica	0.84
	100.00

or—

Nitrogen	11.25
Equal to ammonia	13.68
Phosphoric acid, equal to 1.41 phosphate of lime	0.65

In connection with the preparation of a fish manure, as Dr. Anderson well adds, there are many sources of animal matter which must at the present moment be entirely wasted, although with little management they might be turned to good account. Of these the most prominent is the blood and other offal of slaughter-houses in our small towns and villages. In the large towns the blood is collected, although not very carefully, and finds its way to certain classes of manufactories in which it is employed; but in country places it is for the most part allowed to escape. It would be a matter of some interest to ascertain the annual value of the blood and offal thus lost, which is undoubtedly very large, and a great part of which might easily be saved. Such, however (continues the Professor), is the carelessness of the workmen employed in slaughter-houses, that I have been informed that even in the large towns it is with difficulty that they can be persuaded to save the blood, although its price is really considerable. Fresh blood contains nitrogen equal to about three per cent. of ammonia, and is worth about 2d. per gallon, or nearly £2 per ton; and any farmer living near a small town might advantageously contract to take the whole of the blood at this price. There are many other sources of such animal matters; of these we may particularize the refuse of the glue and oil-boiling works, which yield annually a large quantity of nitrogenous offal; and the two analyses of seal and glue refuse which follow, will show (concludes the Professor) that even when they are prepared without much care, they may become useful manures:—

	Seal refuse.	Glue refuse.
Ash	36.81	53.18
Organic matter	41.85	38.60
Water	21.34	8.20

We have already seen that the question of extending the use of fish manure not long since engaged the attention of Mr. Way. He, too, was evidently impressed with the value of this agent, for he at some length dwelt upon the similarity of composition between some of our cultivated crops and sprats. Wheat, for instance (he observed), contains about two per cent. of nitrogen—so does this fish. 100 lbs. of wheat require about $1\frac{3}{4}$ lbs. of ash, of which about one-half is phosphoric acid, and one-third potash. 100 lbs. of sprats contain 2 lbs. of ash, of which two-fifths is phosphoric acid, and one-fifth potash. What manure (he asks) should be more fit to produce a bushel of wheat than a half cwt. of sprats? Indeed (as he continues), there is nothing surprising in the resemblance. The composition of sprats would probably be found nearly identical with that of any *entire animal* examined in the same way. I have dwelt upon this point in order to show how very valuable a source of manure, and consequently of food, we have in the waters which surround our shores, if we could work out the problem as one of economy. Practically, we do so at this day, by bringing guano, which is *digested fish,* from far distant parts. The use of fresh fish manure is very limited, being confined to within a certain distance of the sea shore, and this for obvious reasons. In the first place, it requires to be used in large dressings, although it is weight for weight at least four times as powerful as farm-yard dung; consequently, the expense of carriage, added to its original cost, soon places a limit to the transportation of this kind of manure; secondly, it will not keep for any length of time, and at whatever season it is taken, it must be at once, or within a few days, applied to the ground. The last objection (adds the Professor) which we shall bring against the employment of sprats as a more general manure, is the great uncertainty of the collection, in some seasons being very scarce, in others so abundant that it pays the farmer to send his waggons twenty or thirty miles for them. The attention of the English Government was in 1852 directed to the subject, and Sir John Pakington caused inquiries to be made in Newfoundland and other places, where it was supposed large supplies of refuse fish might be readily obtained. In the reply of the Governor of that great seat of the cod fishery, he observed (*Jour. Roy. Ag. Soc.,* vol. xiv., p. 94) that there are many parts of the island and its dependencies in which the manufacture of manure from the offal of fish, at present thrown away as valueless, might be extensively and advantageously conducted. The carcases of seals are now abandoned and left upon the ice, the skins and fat only of these animals being now taken on board the sealing vessels. The report of Lieutenant Gaultier, an estimable naval officer in the service of the French Government, is more precise as to the approximate amount of this refuse fish at the island of Newfoundland. We know from experience (he observes) that 400 tons of fresh cod do not yield more than 120 tons of dried fish for exportation. The refuse of the fish, which constitutes about half its weight, are often thrown away (in curing) into the sea. The bones are cast back by the sea on the beach, where they form considerable heaps accumulated for centuries. Without reckoning upon herrings and other fish caught for the purpose, let us only consider the quantity of refuse at our disposal. The produce of the cod fisheries on the banks of Newfoundland amounts annually to about 700,000 quintals (cwts.), of which 350,000 are cured, and the remainder rejected. These 350,000 cwts. of refuse fish, Mr. Gaultier is of opinion, would produce 100,000 cwts. of a powder similar to the best guano.

Here, then, is evidently a source of one supply of a rich nitrogenous manure, which may be serviceable to us when the rainless guano isles of the Pacific are exhausted; and if so, then other fisheries may be established in localities too distant to be serviceable for the supply of fish for food, fishing grounds which may be equal to the demand of our farmers. But then these must be on a much larger scale than any fisheries hitherto established by man; for what would even all the cod at present caught on the great banks of Newfoundland supply to us, if it was *all* employed in the preparation of manure? If we take the data of Mr. Gaultier, we see that all the fisheries of Newfoundland would only yield about 5,000 tons of the imitation guano, and only 10,000 if every cod fish was devoted to the purpose. Now in the last season, three vessels only from the Chincha Islands brought as much guano as this. When, indeed, we consider the 200,000 tons of guano annually brought from these islands, we must feel rather at a loss to understand what kind of flocks of sea fowl must have collected these enormous deposits—what sized clouds of such little fishermen must have thus pastured on the surface of the Pacific Ocean.

The constant interchange which we see thus going on between the earth and the sea—the washings down of the uplands into the waters; the assimilation of some of the organic portions by fish, their considerable restoration in those fish to the soil, are all subjects for our beneficial study. They are portions of that marvellous interchange of the constituents of the animal and vegetable world, which we only at present so imperfectly comprehend; but yet, what we have been permitted to discover well assures us that there is much yet to be accomplished—that other and far greater advances will in all reasonable certainty be made, perhaps at no very distant day; and that then, by the aid of the chemist, we may be able to produce rich nitrogenous manures, without being compelled to search for them in distant lands: we may then prepare at home what we now are beholden to the sea birds and to the accidents of barren rocks in a climate devoid of rain.

THE CHELMSFORD MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

REPORT ON THE CATTLE CLASSES.

It is not the intention to extend this report over the whole of the classes *in seriatim*, but to confine it to those animals and implements more particularly deserving of favourable mention. We are well aware that every exhibitor feels gratified by some notice being taken of the animal or implement of which he is the owner other than the formal mention of him in the printed catalogue. He looks for some favourable notice of his name in connection with the pet subject of his anxious hopes and fears, and even a doubtful compliment is to him better than total neglect. Exhibitors have peculiar cares and anxieties consequent upon the introduction or not of the object upon which they have expended many anxious hours and much troublous thought. In the classes of implements this is pre-eminently the case. The invention or improved adaptation of some novel appliance or movement in a machine is of great importance to the inventor; he looks into a leading agricultural journal to see if it has met the reporter's eye—he there observes the favour with which it is criticised, and he proudly makes the extract and appends it to his next circular. The same line of conduct applies generally to all; and if none other pore over the long list of short criticisms, depend upon it the exhibitors do. We know something of the intense feeling of exhibitors; we, as public journalists, deem it our duty to bring every meritorious animal, and every meritorious implement, before the world in the most attractive and commendable form we can command; but the labour is great, and, notwithstanding the efficient staff we engage, we find it almost insurmountable. Our space will not always permit a lengthened report of many individual specimens of animals or of many separate implements, and the few words that can be said on each, taken consecutively, is sometimes far below the merit of one, and often serves unduly to raise the relative merit of another. We this year confine ourselves, therefore, to those animals and those implements that came more immediately under this view of the show. We have no doubt omitted many things deserving our closest observation; but not taking them in regular order as per catalogue, we request their favourable consideration to the remarks we make upon those animals and articles coming under review. We feel it to be our duty, and we desire, to be as full and explicit as possible, without being tedious. We know that the design of this Society is not personal benefit to its members, but the complete renovation of agriculture—to promote, as far as possible, the increase of the productions of the soil—to provide cheap food for the community. It is not merely a royal society bent upon producing the most splendid specimens of animals, and the like, but a truly philanthropic society, resolved upon lowering the cost of production, and developing the prodigious powers of the British soil, in order that the people may be well and cheaply fed. We claim, then, for it more systematic help; we urge to greater effort to promote an object so good, so useful, and so patriotic.

In reviewing these classes for the year 1856, we would remark that the novel feature is the introduction of foreign stock. They were very properly classified to themselves, and comprised nineteen specimens, representing the best breeds of France. We rejoiced to see them thus represented in friendly rivalry, and it would greatly delight us to know that not only the breeders individually were highly benefited, but that the whole French nation should eventually be blessed by the general introduction of our best breeds into that kingdom. We think many useful qualities developed themselves in the breeds then before us, for milking properties more particularly, as also for the hardihood of the smaller Bretonne races on the one hand, and the adaptation of the larger Normandy and Charollaise breeds to the heat of a climate to which our best breeds are strangers. The beautiful white Charollaise breed denotes some fine proportions, and most excellent quality of flesh. We have not visited Normandy, nor are we well acquainted with the nature of its soil and climate; but our ideas of it lead us to think that our shorthorned cattle would do well there, and that the Normandy blood might also be greatly improved by judicious crossing with that pre-eminent breed. We are glad to find that our neighbours are making many purchases, and that much business in the cattle classes has resulted.

The Shorthorns are a truly excellent class, but we have seen it more numerously, and, in some departments of the class, better represented.

The Herefords constitute a remarkably good class, and, with two exceptions, exceed in number those of the past ten years.

The Devons are an exceedingly good class, and pretty numerous too; they include some beautiful specimens of the breed.

The Other Breeds class is not well sustained; one or two good Suffolks and some good Sussex cattle were there.

The Extra Stock, as we remarked above, were all foreigners.

The comparative progress of the cattle classes, in number of animals, we give in the following table:—

COMPARATIVE PROGRESS OF THE CATTLE CLASSES, IN NUMBER OF ANIMALS EXHIBITED.

Meeting.		Short-horns.	Here-fords.	De-vons.	Other breeds	Extra stock.	Total beasts.
Northampton,	1847..	92	35	28	10	9	174
York,	1848..	105	30	30	8	13	186
Norwich,	1849..	95	28	48	35	4	210
Exeter,	1850..	68	25	124	16	5	236
Windsor,	1851..	176	41	74	94	0	385
Lewes,	1852	64	29	38	92	0	223
Gloucester,	1853..	75	43	55	20	0	193
Lincoln,	1854..	111	29	41	17	0	198
Carlisle,	1855..	98	32	23	0	19	172
Average of 9 years....		98	32	51	32	6	219
Chelmsford,	1856..	78	40	55	25	Forgn. 19	217

SHORT-HORNS.

Class I.—Bulls calved previously to the 1st July, 1854, and not exceeding four years old.

The first prize of £30 to No. 1, Lieut.-Colonel Towneley, for his bull "Master Butterfly," 2 years 11 months. Any lengthened notice of this wonderful animal may appear superfluous, as he possesses a world-wide celebrity. He now stands unrivalled in successful competition, and in his final sale. He has never been beaten in any class in which he has been shown. If we remember rightly, his first success was as a bull calf at the Lancashire Society's meeting; at Lincoln he took the first prize as a bull calf, at Carlisle a first prize in the yearling bull class; at the Irish Society's meeting he took the first prize; at the Paris Show he took the first prize; also at Skipton and at Burnley first prizes; and at Chelmsford the first prize in the class as above; and lastly, he was sold to Mr. Strafford for Australia, for the enormous and unprecedented sum of twelve hundred guineas. Our first acquaintance with Master Butterfly was made very early in the morning of the Society's meeting at Lincoln, when he was thoroughly enjoying his morning's feed of rich new-milk, and plenty of it, being then eleven months old. His proportions *then* are his proportions *now*, with very trifling exceptions; thus proving his true form from his earliest age. He retains his exceeding great beauty and symmetrical frame throughout—a beautiful and somewhat elongated cylinder; his colour is a light roan, very finely marked; he possesses the finest and mildest eye imaginable; his countenance is very handsome, and kindly-looking; he has a beautiful head, and fine waxy horns; his appearance is noble, thorough-bred, not *burly*; he stands sufficiently high, but not tall; his neck is not too full—not coarse, but good; his shoulders are well formed, and out—full and finely formed; good broad chine, and deep in frame through the heart; his ribs are somewhat too flat, not enough thrown out from chine and back; and his girth is rather scant for such an animal. His chest is full and prominent; his brisket, underneath parts, and flank very good, the latter not hanging deeply, but very full and fleshy; his loin is rather long, and, together with his hips, are very good, but somewhat too narrow; indeed his whole back, looking from behind, rather wants breadth: this is the worst feature he possesses, but even that is good, and as level and even as possible. His rumps are long and full; his tuts capital, and tail lies well between; twist full; thighs very long and deep; his purse hangs well; and his offal very fine. He is by no means fat, but shows all his proportions in truth and honesty. He does not denote vast substance, but the quality of his flesh and the suppleness of his skin are admirable. We wish our Australian breeders every success with him, and that Mr. J. T. Hare, his new owner, may richly reap the reward of his noble effort thus to advance the Australian breed of cattle.

The second prize of £15 to Henry Ambler, of Watkinson Hall, Halifax, for his bull "Grand Turk," 3 yrs. 6 months. This is a very noble animal, and beautifully proportioned; his general frame denotes great substance, and much lean flesh of excellent quality. Master Butterfly, with all his superb qualifications, will never attain such great proportions. Turk's girth is 8 feet 11 inches, and round by flank 9 feet 6 inches; his length from horn to tail 8 feet 5 inches, and his height in full keeping. His neck is too thin, but he has a fine head; his bosom is deep, full, and rather prominent; his shoulders are very full, well out, long and deep; great depth in girth, but flat. His ribs, though very long, are not sufficiently springing from chine and back—not rotund enough; nor is his back quite level. He has a broad loin, but rather low, not quite ribbed up enough; very long, full, fat rumps; good hips, well covered; deep thighs; a deep, somewhat-hanging, heavy flank; tuts good, and tail hangs well between them; twist full and offal fine; and he stands well.

No. 6, Mr. Langston's bull, is a very good animal, and worthy the commendation he received.

No. 9. Lord Feversham's "Fifth Duke of Oxford." This is the bull which was beaten at Paris, and not the Carlisle prize bull. He is a superb animal, of excellent quality of flesh and most supple skin; his chest is deep and back level, of great length (8 feet 6 inches from horn to tail). His whole frame is well formed, but somewhat too elongated.

No. 10. Lord Feversham's "Gloucester." This is the bull which took the second prize at Carlisle; he also took the second prize at Malton, the second prize at Ripon, the first prize at Paris last year, the first prize at Milsborough, and the first prize at Burnley. He retains all his good qualities, except his looks, which are a little more surly and dull; his firmness of flesh is remarkable—almost hard.

Both his lordship's bulls deservedly received the commendations of the judges.

No. 17, Mr. T. Crisp's bull, is a well-formed animal, and took the first prize at the late Norfolk meeting.

Class, as *a whole*, not so good as usual.

Class II.—Bulls Calved since the 1st July, 1854, and more than 1 year old.

In this class, the first prize of £25 to F. H. Fawkes, Esq., of Farnley Hall, for his bull "General Bosquet," 1 year 3 months 16 days. A thick-formed animal, with good looks and many useful points.

The second prize of £15 to Mr. Barrowby, of Dishforth, for his bull "Mark Antony." A very useful, fair-framed animal.

No. 33, Mr. Bate's bull, "Dandy Duke," attracted our attention. He possesses a beautifully-formed cylindrical frame, with very pleasing looks; back very level, good chine and chest; hips good; rump long, and well formed; colour, perfectly white. *Not* commended.

This class was not so well sustained as on some former occasions.

Class III.—Bull Calves, above 6 and under 12 months old.

The prize of £5 to H. Ambler, for his bull calf, "Napoleon," 10 months old. This is a truly good-looking animal, and bids fair to uphold Mr. Ambler's great fame. He is a beautiful dark roan, possesses a broad full frame, with fine handsome looks. His forehead is too high, but his neck is well-formed and nicely set to his shoulders, which are well out and full; his chest, chine, and girth very good, ribs well springing, back very level and uniform, loins broad; his hips are too close, almost to a fault; twist good, and offal fine. The quality of this animal is altogether of the first class. Sold for £200.

No. 44, Mr. W. F. Hobbs' bull calf, "Augustus," 10 months, is well worthy our notice. He possesses a finely-formed frame, with a beautiful level back, and bids fair to excel.

This class we have seen represented better.

Class IV.—Cows In-milk or In-calf.

The prize of £20 to Lieut.-Col. Towneley, of Towneley Park, for his cow, "Roan Duchess 2nd," roan, 3 years and 9 months. We have seldom seen a cow which comes up nearer to our taste in the bovine race than this animal. That she stands at the head of the first class in Shorthorn cows there cannot be a doubt. As a calf she took the first prize at the Lancashire meeting; she took the first prize at the Lincoln meeting, as a yearling heifer; the second prize at Carlisle, as a two-year-old in-calf heifer; and at Dublin she took the £120 cup, as the best female in the show-yard. Her colour is a full roan, neither dark nor light. Her head and neck are very fine, with pretty waxy horns, mild handsome countenance, a capital chest and out-shoulder; chine perhaps a little too narrow, and ribs, though very deep, scarcely hooping enough from chine, &c.; loin exceedingly good; hips broad and full; the rump and tuts long, fat, and somewhat drooping; tail deeply in between the tuts; thighs very deep, but rather flat; flank deep, and full; udder and teats rather scant,—yields the richest milk. She stands well, and is noble-looking, but her legs are rather too short. She is forward with calf.

The prize of £10 to Lieut.-Col. Towneley, of Towneley Park, for his cow, "Blanche the 6th," red and white, 3 years and 10 months. She has a very handsome countenance, with fine horns, thin neck, chest first-rate, chine full, girth good, loin very good and broad; hips well out, covered, and proportionate; deep in frame throughout, very long rumps; rather low tuts, udder hangs well; thighs very deep; gives a large quantity of rich milk. She is in calf.

The other cows in this class could not, in point of perfection, touch the above.

Class V.—Heifers in Milk or in Calf, not exceeding 3 years old.

Lieut.-Col. Towneley again takes the first prize of £15 in this class, with his Victoria, roan, 2 years 8 months. It is sufficient to say that she manifested most of the usual fine proportions we see so often exhibited in the animals shewn by him. Mr. R. Stratton, of Broad Hinton, takes the second prize, £10, with his Marcia the 3rd. This is a finely-formed heifer, and very complete in nearly every point; her milk-vein very prominent, denoting a good milker.

No. 60. Lord Walsingham's heifer, we thought deserving our favourable mention; she possesses a deeply formed, good frame, capital flank, and excellent tuts.

Class VI.—Yearling Heifers.

Mr. Booth, of Warlaby, we are pleased to find, here steps in, and takes the first prize of £10 with his yearling heifer Queen of the May, 1 year 8 months. She is in every respect a model of what she ought to be, excepting her twist and thighs, which are rather light.

No. 70, Mr. Grenfell's heifer, takes second prize of £5. She is very level and complete, and her frame is truly cylindrical, but somewhat too long to be very compact.

No. 65, Mr. Stratton's heifer, deserves notice in this class, being a little beauty, well formed throughout, and of most delicate colour and fine proportions.

We must repeat, that we do not deem the short-horn classes, taken collectively, to be so well sustained as in many former years. We know that many of our best animals lately crossed the channel never to return, and thus we were deprived the pleasure of their inspection; but what we regret is the absence of the animals of many of our best breeders. Where are the many well-known names which have figured so honourably on our lists of exhibitors and prize-holders, and whose names it would be almost invidious to select? We hope, and we would urge them to come forward next year. There never was a time when the demand for first-class animals was so good as at present. There is ample room and ample scope for every competition. The prices realized have been unusually high, and the supply by no means sufficient to satisfy the requirements of the foreign breeders and our own Australian colonies.

HEREFORDS.

Class I.—Bulls calved previously to the 1st of July, 1854, and not exceeding 4 years old.

In this class, Lord Berwick's Napoleon III., 3 years 5 months 2 days, takes the first place ; the prize of £30 is awarded to him. He is certainly one of the most compactly-formed Herefords we have ever seen. He is not long in frame, but amazingly deep ; his chest, and all along his underneath parts, exceedingly good ; his flank very full, deep, and low ; his chine and girth great and good ; back a little amiss ; hips are fair width, and good ; his legs are short, which perhaps causes him to look less noble than his general proportions would indicate. The quality of flesh and softness of skin quite first-class.

Mr. Price, who is well-known as a first-class breeder of Herefords, takes the second prize of £15 with his bull Goldfinder, 3 years 11 months. This is another short-legged bull, of large proportions, deep in frame and full throughout; very deep chest, and stands wide; his twist very full, and good tuts, rather short.

No. 80 attracted our attention long before we knew he was the property of His Royal Highness Prince Albert, and we think him deserving of especial notice. He is more to our taste : he is of good length, mild countenance, horns rather long, deep frame, good level back to hips, from whence he droops too much; good twist, but rather too narrow ; full thighs. His general proportions denote expansion and beauty.

No. 82, Mr. Taylor's bull, was commended.

Class II.—Bulls calved since 1st of July, 1854, and more than one year old.

Mr. William Raester, of Thinghill, takes the first prize of £25 with a very useful animal of fair, but somewhat too narrow frame; and Mr. E. Williams, of Llowes Court, takes the second place, the prize of £15 with a good fore-quartered animal.

No. 88, Mr. Rea's bull, was very deservedly commended. He has a deeper frame and is more compact than the above, but his chine is defective.

No. 89, Lord Berwick's bull, is of beautiful quality, but not uniform in frame.

No. 87, Mr. Stedman's bull, has a deeper frame, and fair length, but his top is defective.

Class III.—Bull Calves.

Mr. William Perry, of Cholstrey, takes the prize of £5 with a very beautiful calf of exceedingly good quality and full proportions; his chine, girth, loin, and thighs are all very good, and back level and broad.

No. 95, Mr. F. Hobbs' bull calf, received a commendation for his very thick and compact frame.

Class IV.—Cows In-milk or In-calf.

Mr. W. Perry again takes the first prize of £20 with No. 96, a very beautiful animal; her frame uniform and good throughout, twist and thighs alone defective. Her brisket good, and milk veins denote a first-class milker ; her chine and ribs are all you can wish for, in her frame; shoulders well out, hips just right, her countenance mild and docile. She is not large, nor does she stand high, but very complete.

Mr. P. Turner, of Leen, takes the second prize of £10 with No. 100. She is rather short in frame, but very full and compact. Her back is somewhat hollow, her chine is good, and girth great. Her rumps, tuts, twist, and thighs are all excellent, and tail well set. Her quality is quite first-rate, and her offal fine. She is very handsome.

In this class there are several splendid specimens of Hereford cows. No. 98, Mr. Stedman's, and No. 99, Mr. T. Duckham's, deserve our special notice; and No. 101, Mr. J. Walker's cow, was highly commended.

Class V.—Heifers In-milk or In-calf.

The first prize of £15 was awarded to Lord Berwick for his very beautiful heifer (No. 104) "Carlisle," red, with white face. It would almost suffice to say that it would be a difficult task to find a fault, certainly not a great one; she is very handsome, of compact symmetrical form, and deep in frame; hips not prominent, but well covered ; her loin remarkably good ; full in chest ; good in girth ; horns fine and waxy—one droops, the other up ; her offal fine, andquality of flesh exceedingly good. If she has a fault, it may possibly be found in her chine.

Mr. W. Raester takes the second prize of £10 for No. 103. She possesses first-rate quality of flesh, a beautiful level back, and is very cylindrical in frame; capital shoulders ; her chest and chine somewhat too narrow ; great breadth of loin and rib ; rather short on leg. Near calving.

A small class, but good.

Class VI.—Yearling Heifers.

Mr. W. Raester takes the first prize of £10 for No. 114. She has a very good and handsome form ; but has many defects. Her hips are narrow and rump high and ill-formed ; loin narrow, ribs not well springing, thighs light, no tuts, shoulders coarse, and flank thin. Query as to prize being right.

Mr. W. Mayberry, Brecon, takes the second prize of £5 for No. 108 ; a very handsome heifer, of great uniformity in frame, rather too long, but cylindrical and well formed; her flank, thighs, and twist very good ; hips broad and fat; tuts prominent, but well up.

Mr. Mayberry's heifer (No. 107) was highly commended, and very deservedly so. She is very pretty ; and of fine form, quality, and proportions.

No. 111, Prince Albert's, is highly deserving our notice, entirely from her own merit. She is more noble in character than any one in her class; rather long in frame, very cylindrical, and symmetrical; in frame perhaps somewhat too narrow. She is handsome, and of excellent quality.

DEVONS.

Class I.—Bulls calved previously to 1st July, 1854, and not exceeding 4 years old.

In this class Mr. Quartly, so justly celebrated as a breeder of Devons, takes the first prize of £30 for No. 128, his bull "Sultan," 3 years and 4 months. This bull is almost a perfect cylinder. He is a remarkably compact and well-formed animal, of very superior quality ; short legs, great in girth, capital fore-quarter, a very level back, and very uniform in his proportions and colour ; his hips and tuts are too narrov, and tail stands high. We always think this a fault in the Devon breed.

Mr. W. Gibbs, of Bishops Lydeard, takes the second prize for his bull, No. 120. He is very deep in frame, has a full chine, neck and chest good ; his fore-quarter is altogether good, and he has a good level back, and stands wide ; but his hips and loin are too narrow. He is large in frame, but not tall. Quality of animal very good.

No. 122, Mr. Farthing's bull, is long in frame, very cylindrical in form, not large, but excellent in quality. He was highly commended.

Class II.—Bulls calved since July 1st, 1854, and more than 1 year old.

The first prize in this class was awarded to His Royal Highness Prince Albert, for his bull No. 130, "Zouave," red, 1 year and 9 months, bred by Mr. G. Turner, of Barton. It always rejoices us to see our princes and nobles entering the lists as general competitors in the most laudable endeavour to promote a nation's wealth and the advancement of agriculture. In this peaceful rivalry prince, peer, and peasant meet upon common ground, and take their stand and chance with the band of exhibitors; and without favour or fear are the adjudications given, in the most perfect spirit of fairness, and in exact accordance with the merit of the animals exhibited. The peasant has as good a chance, personally, as the prince. Woe to the society were it otherwise! We are glad to see that the Prince has reaped rural honours again, by the award of the first prize of £25. This is a first-class animal. His countenance is very mild and pleasing; his chest, brisket, flank, and underparts excellent; his hips, loin, thighs, tuts, and twist are all good, and full; his back straight and level; perhaps his chine is too narrow, and his horns are wide; but he possesses beautifully symmetrical proportions, and is of first-rate quality of flesh and softness of skin.

The second prize of £15 was awarded to Mr. J. C. Halse, of Molland, for his bull No. 135, "Earl of Essex," 1 year 4 months and 3 weeks. A very complete animal; his chief points all good. He stands wide; shoulders, chine, back, loin, ribs, chest, all good; flank very good; his head and horns somewhat too coarse, and thighs and twist too thin. He is a great beauty, and fine in offal and quality.

No. 134, Mr. R. Corner's bull, is highly commended, and very properly.

CLASS III.—BULL CALVES ABOVE 6 AND UNDER 12 MONTHS.

The prize of £5 in this class was awarded to Mr. G. Turner, of Barton, the celebrated breeder of first-class Devons, for his calf No. 138. An exceedingly handsome animal, of almost perfect symmetry; a little "animated cylinder" of finely-developed proportions. The most beautifully-formed animal we have yet seen in the yard. His general form is very compact, deep in frame, and on short legs. We believe he will grow up to become the head of his class. His general form denotes an expansive development into a truly good animal.

No. 136, Mr. Holes' calf, is worthy of a passing note; at least he is, as a whole, well formed—top a little too narrow.

CLASS IV.—COWS IN-MILK OR IN-CALF.

This is a superior class. The first prize of £20 is awarded to Mr. James Quartly, of Molland, for his cow No. 148, "Stately." She is exceedingly beautiful, and possesses the best quality of meat we have yet seen in the yard. Her frame is very symmetrical, and true in form; and her offal remarkably fine; her only fault is in being somewhat too small, but still a superb animal, taking her altogether.

The second prize of £10 is awarded to Mr. W. Farthing's cow, No. 143, "Fancy," a cow possessing a splendid frame, of most excellent quality of flesh, uniform and symmetrical throughout, not large; she has a fine horn, and handsome mild looks; her shoulders very good, and below her chine somewhat unusually good as to place; her hips and tuts good; twist and thighs too narrow; udder hangs too close; teats fair.

No. 141, Mr. W. M. Gibbs' cow, received a high commendation. She is a large and good cow, very handsome along her top; splendid hind quarters; a long capital frame, and beautifully mottled skin of light red colour.

No. 150, Mr. Jas. Quartly's cow, was also highly commended for her many excellencies, as was also No. 151, Mr. J. C. Halse's cow.

CLASS V.—HEIFERS IN MILK OR IN CALF, NOT EXCEEDING THREE YEARS OLD.

The first prize in this class was awarded to Mr. Jas. Quartly for his heifer (No. 159) "Nonpareil," a very beautiful and compactly-formed animal, of somewhat small dimensions, but as perfect in frame as possible; and the beauty of her countenance, fineness of horn and offal, and uniform proportions, obtained for her universal admiration.

The second prize of £10 was awarded to his Royal Highness Prince Albert, for his heifer (No. 152) "Lobelia," 2 years 7 months. This is a very good animal, but not so perfect as No. 159. She has a splendid fore-quarter, and stands well forward, and is of great depth, but her hind quarters are not so perfect; her loin is rather low; her hips are remarkably broad and good, but from her hips to tail her frame is too high, her thighs and twist too narrow, and she stands too close behind; her horns rather too pointing out and upwards.

No. 153 is of most beautiful quality and fine form, but small.

CLASS VI.—YEARLING HEIFERS.

The first prize of £10 is awarded to Mr. E. Pope, of Great Toller, for his heifer (No. 167) "Fancy." She is one of the handsomest and best-formed animal. in the yard, denoting full maturity at an age so early; her form and beauty are nearly perfect, and the quality of her meat and hand exceedingly good. We name no point in prominency, for all alike are good, and almost faultless. We hope to view her next year.

The second prize of £5 is awarded to Mr. Jas. Hole, for his heifer, No. 173. This animal is exceedingly handsome, and of very compact frame; she is unusually good in all her under parts, full and well furnished; not so perfect as No. 167, but a very good second to her. We shall look forward with interest to see them again in competition.

No. 161, his Royal Highness Prince Albert's heifer, is small, but of very fine proportions; her frame is nearly perfect, and her beauty great; perhaps her top is a little too narrow.

CATTLE OF ANY OTHER BREED.

CLASS I.—BULLS CALVED PREVIOUSLY TO THE 1ST JULY, 1854, AND NOT EXCEEDING FOUR YEARS OLD.

These classes were fairly represented, but as nothing very remarkable occurs to note in any of the animals, we will take the classes collectively. Lord Sondes took the first prize of £20 with a very useful Suffolk bull, of long frame and deep chest. Mr. Turner's second prize bull is of the Sussex breed, and possesses a good fore-quarter, and is of good quality.

CLASS II.—BULLS CALVED SINCE THE 1ST OF JULY, AND MORE THAN ONE YEAR OLD.

Mr. Badham's calf takes the prize of £10; he has a short and compact frame, but in other respects not filled up enough.

In CLASS III.—COWS IN MILK OR IN CALF,

Mr. G. D. Badham also takes the first prize of £10 with a very mediocre Suffolk cow, of narrow long frame, narrow girth and chine, bad loin, her tail high above her tuts, bad flank. We believed the prize ticket had by mistake been placed to the wrong number, but we have not heard of its correction.

No. 186, Mr. T. M. Hudson's cow, takes the second prize of £5. She is a well-formed Suffolk cow, compact in frame, and good, but not large.

No. 183, Mr. Jas. Gorringe's cow, is really a superior Sussex cow, with excellent proportions; her chine perhaps a little too sharp, but otherwise her points are nearly all right. Why she is left entirely out we could not divine.

In CLASS IV.—HEIFERS IN MILK OR IN CALF,

Lord Sondes again takes the prize for his heifer, No.

192. She is a very good animal, with wide uniform frame, of fair proportions; her defects being a light flank and thin loin, and her frame a little too high from hip to tail.

IN CLASS V.—YEARLING HEIFERS,

Mr. G. D. Badham is again fortunate, and very deservedly so. His heifer (No. 196) has a good well-formed frame, her shoulder well out, with good chest and fair girth; thigh and twist rather thin, and tail somewhat too high. His heifer No. 195 has a fair frame, and is good in quality.

HORSES.

The number of horses (including stallions, mares, &c.), shown at each meeting for the last ten years is as follows:—

Meeting.		For Agricultural Purposes.	Roadsters and Drags.	Extra Stock.	Total.
Northampton..	1847	51	0	3	54
York	1848	57	7	9	73
Norwich......	1849	77	11	6	94
Exeter	1850	49	10	3	62
Windsor......	1851	78	42	0	120
Lewes........	1852	80	7	0	87
Gloucester....	1853	63	35	0	98
Lincoln	1854	76	12	18	106
Carlisle	1855	83	0	90	173
Average of nine years		58	14	14	96
Chelmsford....	1856	123	7	66	196

It will be seen by the above table of the comparative entries of horses at our different agricultural meetings since that at Northampton, in 1847, that Chelmsford has just shown a larger display of the finest specimens of this class of domestic animals than the rewards of the Society have ever before brought together; and in proportion to its extent, so was its excellence. We never saw at any time such a noble gathering of noble animals. No one could be so impressed with this fact of excellence, however, as those who saw the horses enter the yard in the morning, or leave it in the evening for their private standings in the town. It falls not often to the lot of any one to enjoy such a treat; and a person who desires to keep his judgment alive may rest assured that he is amply repaid the pecuniary expense and loss of time involved in a journey from one end of the kingdom to the other for the purpose of viewing the stock assembled by the society.

The breeding of two kinds of horses comes within the province of the farmer—one for purely agricultural purposes, and one for purposes of riding, hunting, and coaching. The first knowledge essential to a successful breeder of horses is only to be gained by acute observation and incessant labour. To a man who is seeking to become practically acquainted with the peculiar qualities of these two diverse breeds, meetings such as the one we have now to report afford the most valuable facilities. To start as a breeder with limited means, and without this faculty of minute and constant observation, is to premeditate failure; for, humanly speaking, failure must ensue. It is a want of application, from which this lack of knowledge proceeds; and resulting from this fertile source, we see bad breeds of animals of every kind continued. When men who have risen to eminence as breeders seek to give publicity to their mode of management, and not to shroud them in mystery, as is common in some crafts; when all that has been done, and all that is now doing, can be ascertained and criticised; when it becomes matter of ease, consequently, to speak pretty confidently of causes from results that are so fully made known, and to compare the published experience of the men of greatest note, we must charge that farmer with apathy who blunders ignorantly on, thinking obstinately that every sort or shape of animal on the female side is good enough to breed from.

Now, the Royal Agricultural Society brings together annually the finest type of the two or three classes of horses required by farmers for breeding purposes, and those who choose not to profit by the display are indeed dead to the claims of self-interest, to which most of us too obediently yield.

As might be supposed, the Suffolk horses mustered in great force at Chelmsford. There is a hardy horse bred in Essex, of a bay colour, with black legs, adapted to the heavy clays, but the Suffolk breed is most popular; indeed, although the Punch does not seem to be much in favour with the judges, from year to year he seems to be decidedly gaining ground with the public. And when we consider his stout compact body, his prodigious neck, his beautiful head and mild eye, his strong serviceable active limbs, we cannot wonder that he should be a great favourite.

CLASS I.—STALLIONS FOR AGRICULTURAL PURPOSES, FOALED PREVIOUSLY TO THE 1ST OF JANUARY, 1854.

There are 46 entries in this class, 23 of which are Suffolk horses. Of these, 3 are representatives of Mr. Crisp's "Captain" and "Boxer"; 7 of Mr. Catlin's "Royal Duke" and "Captain"; and 2 of two horses of Mr. Barthropp's. One amongst the 7, from Mr. Catlin's stock, "Major," a four years old horse, the property of Mr. Manfred Biddell, of Playford, near Ipswich, receives the second prize. This is a good specimen of its class. Here is strength enough, size enough, and activity enough for any work. The fine expressive head, characteristic of Mr. Catlin's blood, is here fully developed. This is the peculiar seal that seems to distinguish all the members of this family. The rest of the class is composed of Leicestershire, Essex, Oxfordshire, Shropshire, Lincolnshire, Northamptonshire, Lancashire, and Clydesdale horses. There is only one representative of the latter breed, and he, the property of his Royal Highness Prince Albert, takes the first prize. He is a small, well-furnished horse, of bright bay colour, and black legs; the head is not good, and the hind-quarters are defective, but the neck, chest, and fore-legs are superb. The Prince purchased him for £240 at Glasgow, where he took the first prize, four months since. We saw him out several times, and thought his action very superior, both as a trotter and walker. The award here seemed to give very general *dissatisfaction*. There is frequently a disposition, we know, to carp at the decision of judges —a disposition we do our best, as a rule, to correct; but here we were obliged to side with the mass. We are glad to see the Prince condescending to compete with "his brother farmer"; but we believe that he would be the last to desire that his title should weigh in the balance, when a strictly impartial adjudication is so essential. The remark made last year in the report on Clydesdales at Carlisle is fully borne out by this horse. "One of the greatest defects," we then wrote, "that struck us, was the *variable* character of the breed. They are all sizes; no sort of certainty. The breeder may scarcely seem to have any idea as to whether he may be blessed with a Mammoth or a Galloway. When the breed does not perform logically, the breeder cannot argue logically." Saving in respect of action, this is not what we should class amongst the Clydesdales, judging merely from appearance. He has not size enough.

A "high commendation" is not given in this class.

It receives six "commendations," which are fairly divided. Mr. Barthropp receives one for his splendid "Hercules"; he stands 16 hands 3 in., with great length of barrel, and faultless legs, and good feet. Mr. Willes received a second for "Constitution," who appeared to be appropriately named, if a square well-built frame is an indication of robust vigour. The third is awarded to an Essex horse, the property of Mr. Rust. The fourth to an Oxfordshire animal, the property of Mr. Buller. Messrs. Blewitt and Scraggs obtain respectively the fifth and sixth commendations, for very superior animals.

On looking round this class we see one very general defect—small confined shallow feet. It is of no consequence what may be the beauty of the superstructure if the foundation be not good. This is a point to which we fancy more attention should be given. A deep broad expansive foot, for plough-horse, roadster, or hunter, is alike necessary. There are, too, a great many cupped hocks. There are two "Special Commendations," given—we suppose, by way of encouragement and compliment—to two French horses, one of which was said to have gained a first prize at Boulogne. So far as our own opinion is concerned, we shall gain nothing, and lose much, by the introduction of foreign cattle into this country for breeding purposes. Foreigners are so far behind us, that we can reap no advantage from a cross with their blood; and we do not, therefore, see the use of encouraging the exhibition of their horses, &c., in our country. The horses we now speak of possess many qualities, from which we have been at considerable pains to get away, by careful selection. We nearly forgot to mention that Messrs. S. & R. Spencer's "George the Second," which won the second prize in this class at Carlisle, is here. Although improved, he receives neither prize nor commendation, and this fact alone attests the superiority of this division of the show over last year. It is very surprising to observe the good condition of nearly the whole of these animals. Many have had heavy seasons, but yet look lively and fresh.

Class II.—Stallions for Agricultural Purposes foaled in the year 1854.

Out of the 28 entries in this division, there are 20 Suffolk horses. The first and second prizes are taken by pure-bred Suffolk horses. Mr. Sexton is the owner of "Boxer," to whom the first is awarded, and Mr. Badham of "Napoleon," who stands second. This second horse, which attracted considerable attention at Carlisle as a yearling, is of Catlin blood. The first prize also has a strain of the same blood. He stands like a tower of strength. The union of the neck and shoulder is admirable. His barrel is well turned, rib not too deep, his bone is fine and flat, and his legs clean; indeed he presents a living testimony to the fact that bone and flesh do not constitute strength. The breeder here seems to have succeeded in establishing the advantage that lies in reducing the size of useless parts, and in getting rid of unnecessary appendages. Huge bulk must be reduced before symmetry and compactness can be acquired, it being an invariable law that bulk is attended with a corresponding degree of coarseness. This practice must not be carried too far. The object of the breeder should and must be to retain a certain size in the animal, and to impart to that size the necessary muscle and spirit. We never saw, perhaps, a squarer or finer top than that exhibited by Williams's "Champion," but the legs and feet were not of sufficient substance to support the immense weight. He received a commendation. At Stowmarket he has taken the first prize at the two last shows. Messrs. S. & R. Spencer's "Carlisle" receives a high commendation. This horse, a brown roan, it may be remembered, took the first prize at Carlisle in the yearling class. We could not say enough in his praise last year. He has come up well, and if carefully handled, will yet do better things. Mr. Wilson's "Briton" was also in the yearling class at Carlisle. He was the best specimen of a Suffolk yearling we ever saw, but he has not come up quite so well as he promised. The best style of foot in this class was possessed by a young Clydesdale horse; and the finest heads we saw belonged without exception to Mr. Catlin's stock, directly or indirectly.

Class III.—Agricultural Stallions foaled in the Year 1855.

In this class there are ten competitors. There is nothing so remarkable as Mr. Howard's "Koh-i-noor" of Lincoln memory, nor Messrs. R. and S. Spencer's "Carlisle" of Carlisle renown.

Mr. Clayden takes the first prize with a Suffolk yearling of great height and much bone. His shoulder is light, his chest narrow, and his arm small. Mr. Laws's, on one side, is squarer and better furnished, his shoulder is deeper, and his arm more muscular; but in height he is inferior to Mr. Clayden's. The prettiest animal in this class is Mr. Sparshatt's Suffolk roan, which, unfortunately, was foaled very late. A high commendation is awarded to Mr. Berridge's Leicestershire black yearling. Eight in this class of ten are Suffolks, one is from Gloucestershire, and the other from Leicestershire.

Class IV.—Mares and Foals for Agricultural Purposes.

There are a large number of entries in this class, viz., twenty-three; but none of the Carlisle, nor, as far as we know, the Lincoln celebrities, are here. Seventeen out of the twenty-three are of the Suffolk breed, most of which display in the most unmistakable manner Mr. Catlin's blood. We never saw such an array of exquisitely moulded heads and beautifully placid eyes before. The class seems to attract great attention, and well it may. The first prize is awarded to Mr. Carter's "Primrose." To note her roomy carcase, her roundly-formed wide barrel, with the ribs curving from the back, and the short-rib well home; her deep muscular thighs; her flat thin leg bones, clear of rank hair; her clean firm feet, her short pasterns, her brawny arm, deep chest, and shoulders sloping backwards at the wither, and shortening the back; her neck proudly arching from the withers, and drooping to the set-on of the head; her strong firm crest, thickening downwards, surmounted by long fine ears; her broad face tapering to the muzzle; and her prominent, lively expressive eyes—to note all these, and many more qualities, is, we say, at once to coincide with the judges in awarding "Primrose" the palm. The same elements of a first-class mare are also possessed in more or less degree by Mr. Barthropp's aged mare, who takes the second prize. We see now where he has got the shape and style that have won him so much credit at our annual meetings. This is such a foundation as every breeder should build upon. The chief point of excellence that characterises her is, perhaps, the deep muscular thigh; but she is good all over. The foal is very superior. Mr. Barthropp has another mare and foal here. The foal is poor, rather deformed; but all that we have said of Mr. Carter's mare may be safely reiterated when this one is viewed: we never saw anything better. The best foal in this class is Mr. Sheppard's, but the mare is too naggish. Mr. Cordy's "Machet" receives a deservedly high commendation.

Class. V.—Fillies for Agricultural Purposes.

In this class there is a good assortment of fillies.

Of seventeen, twelve are of the Suffolk breed; and the Catlin head and eye are again very observable. The first prize is obtained by Mr. Wrinch, and the second by Mr. Clayden, both for Suffolk animals. We hear a great deal of dissatisfaction expressed about these awards. It is the opinion of many that Mr. Ward's filly, which is commended, should have stood first. We agree with the judge, however, who must have rejected Mr. Ward's had she been, which indeed she is, perfect everywhere else, on account of her head. In this point she forms a singular exception to Mr. Catlin's stock. Mr. Holland, M.P., receives commendation for a sister to the two fillies that carried off the first and second prizes in this class last year at Carlisle. His Royal Highness Prince Albert gains a "high commendation" for a Clydesdale filly of great beauty and promise. His horse and this filly may lay the foundation for a fine race. We lingered long about Mr. Wrinch's filly; it does one good to study such peerless forms.

DRAY HORSES.

Class I.—Stallions foaled previously to 1st of January, 1854.

Admirers are crowded very thick round these splendid creatures. Mr. Baker's "Young Inkerman," who bears away the first prize, amazed everyone. The old saying, "It takes two horses to make one good one," seems to be literally fulfilled, for this fellow looks as big as any two, and yet so perfectly furnished. His colour is iron grey, as is that of Mr. Whitehead's "Young Captain," to whom is awarded a high commendation. Our attention is perhaps more riveted on the sole constituent of

Class II.—For Stallions foaled in the year 1854.

The judges thought him so remarkable that, although he had no competitors, the prize was given to him. His colour is roan, and his owner is Mr. Timm.

SHEEP.

The number of Sheep at different meetings is as follows:—

Meeting.	Leicesters.	Southdowns, &c.	Long Wools.	Other Breeds and extra Stock.	Total Sheep.
Northampton..1847	85	71	29	4	189
York 1848	134	46	37	11	228
Norwich......1849	102	79	29	7	217
Exeter.......1850	79	80	30	8	197
Windsor......1851	136	132	29	19	316
Lewes........1852	55	88	15	25	183
Gloucester....1853	64	95	80	53	292
Lincoln......1854	102	67	96	38	303
Carlisle......1855	119	51	63	97	330
Average of 9 years..	97	79	45	29	251
Chelmsford ... 1856	60	105	52	Foreign. 2	219

LEICESTERS.

As appears from the table, the show of Leicesters was small; and from a careful inspection of the various animals, we record it as our conviction that in character and quality they by no means excel those exhibited in former years.

In Class I.—Shearling Rams,

there were many very beautifully formed animals, possessing considerable size and substance and good fleeces, as well as compactness, fine bone, and firm meat.

Mr. Pawlett's prize ram is very wide, with a beautiful back, good hand, broad loin, deep full plait, and fine head and bone.

Mr. Pawlett's second prize sheep is remarkably well-formed, with excellent chine, neck, loin, and rump. In this class we observed too many animals reminding us of the witty definition that "a Leicester sheep is like a soda-water bottle on legs;" the necks being too lanky, the rumps narrowing off, and the general conformation being deficient in breadth, depth, and compactness of symmetry.

Class II.—Rams of any other age.

Mr. Pawlett's prize ram, 40 months old, has a good scrag and fine countenance, wide out-springing chine and ribs, broad chest, good back and loin, and short curly wool.

Mr. Cresswell's second prize sheep, 28 months old, is of very fine quality: has a deep frame, beautiful mutton, and may be pronounced a very superior animal.

Class III.—Pens of Five Shearling Ewes.

We missed the beautiful and almost perfect specimens of symmetrical and fine ewes heretofore shown by Mr. Sanday, but still the three pens exhibited contained some very pretty and useful animals.

Mr. Watkins's prize ewes are very fine, with exceedingly good meat, and good curly fleeces.

Mr. Turner's second prize ewes are very level, with straight good backs, compact form, and nice wool.

SHORT-WOOLLED SHEEP.

The show was exceedingly large—indeed, unexampled except by the Windsor "Exhibition-year" meeting; and the character of the animals exhibited shows that a general improvement is manifesting itself throughout the various Southdown breeding districts, very few of the rams having the unsightly defects which have often appeared in the show-yard on previous occasions. We must, however, again protest against the practice of clipping sheep into shape, which has been resorted to this year by several eminent as well as less noted breeders.

Class I.—Shearling Rams.

The first prize was awarded to Mr. Overman, and considerable discussion has been raised upon the decision of the judges, exciting no ordinary interest throughout the show-yard. The fact that "Jonas Webb" was beaten in competition was sufficient to rouse the greatest interest among the Southdown breeders, so that a very large amount of criticism was expended upon the rival animals, especially as Mr. Webb's shearling was the prize sheep of the Paris show, and had been refused to a purchaser (we were told) at the large sum of 500 gs. Mr. H. Overman, the successful competitor, is a celebrated breeder in Norfolk; and, waiving any doubt as to the decision of the judges, we rejoice much at his present success, his ram being a very superior animal. Mr. Overman's flock has not been surpassed for many years, for wool and substance. The Chelmsford prize shearling is quite in character, having a large well-formed frame, with capital bosom, good flank, thighs, and good neck, and yielded a large fleece of 10lbs. But still we thought him hardly so handsome or symmetrical as Mr. Webb's shearling, which received the second prize: his general frame and proportions were barely so good, and his back not so even; while in quality of flesh and wool he is inferior. Perhaps still Mr. Overman's would be preferred by the public. For our own part, we have some doubts whether either of these animals deserved the greatest honour; another of Mr. Webb's sheep (No. 410 we think) proving admirably to our hand. The proportions and ripeness of this animal exceeded those of the two selected, and in beauty and symmetry he was quite their equal; careful examination, however, is required to bring out all his merits, and, if he have any defect, perhaps it is in his legs being a trifle short.

Lord Walsingham's lot of rams deserved our highest praise; and though they beat Mr. Overman's at Norwich, taking two prizes, they have been passed over here without even a commendation. The cool judgment of those appointed to make the awards may be very philosophical, but savours little, we think, of either enthusiasm or heartiness towards good breeding and meritorious breeders. Mr. Rigden, Mr. Lugar, and the Duke of Richmond exhibited some excellent animals, and several might have been found belonging to other breeders that might have worn a word of honour with a good grace.

Class II.—Rams of any other age.

Lord Walsingham's first prize ram, 27½ months old, has very great substance, thick neck, good loin and chine, beautiful meat, and a fine fleece.

His Lordship's second prize ram, "Raglan," 27½ months old, is very large, long, wide, and well formed. For this sheep, we believe, 250 guineas have been offered and refused.

We particularly admired the Earl of Chichester's rams; beautiful animals, compact, with good necks and rumps, loins not too high, and with fine heads and bone.

Mr. Hart's are very well formed and superior animals, having plenty of wool of fine quality.

Mr. Sturgeon exhibited two pure Merinos, which attracted much notice by their singular horned heads and heavy fleeces of splendidly fine wool.

Class III.—Pens of Five Shearling Ewes.

Lord Walsingham's first prize ewes are large, wide, and of very beautiful quality, having fine bone, and being exceedingly level in character.

His Lordship's second prize ewes are very good, symmetrical, and beautiful. These lots were sold, one to the French Government and the other to an American gentleman, at 20 and 17 guineas each respectively.

Mr. Overman's ewes are very beautiful, remarkably well formed, with good necks and superior rumps and legs.

LONG-WOOLLED SHEEP.

In numbers they were considerably above an average, and in merit surpassing, we should say, those shown at Carlisle, although falling short of those which by a happy effort of the Cotswold breeders were collected at the Lincoln meeting. The practice of unfair clipping is also, we are sorry to say, to be found among the Cotswolds as well as the Downs.

Class I.—Shearling Rams.

Mr. Walker's first-prize ram is of wonderful size, beautiful symmetry, and fine offal; and has a splendid fore-quarter, plaits, loin, and rump.

Mr. Beale Brown's second-prize shearling has a first-rate back; good rump, loin, chine, and neck; great fore-quarter; and good long curly wool.

Class II.—Rams of any other Age.

Mr. Lane's prize ram, 28 months old, is of immense height and width, and has a remarkably good neck, chine, and splendid hand.

The second-prize sheep of Mr. Wm. Garne, jun., 39 months old, is of tremendous length, immense width, and has a thick neck; extraordinarily good loin and rump, with good wool, and bone not coarse.

Mr. Fletcher and Mr. John Garne have sheep "commended," the former having a famous chine, neck, and curly fleece; the other a very superior animal, good both in form and feeding quality.

Class III.—Pens of Five Shearling Ewes.

Mr. William Lane's prize ewes are very beautiful, of excellent form, having fine head and bone, and good fleeces. His second-prize ewes are very fine, but not so wide or well made as the former lot.

Mr. Walker's ewes are "commended," and deserve the distinction for their firm and beautiful hand. Mr. Beale Brown's ewes are uncommonly good, both for back, chine, rump, and wool. Indeed, we are doubtful if the best lot of ewes in the class has received the right prize.

PIGS.

In taking a review of the various Pig classes, we shall be brief. Unquestionably it is a class of animals of no ordinary importance; and the quantity of food yielded by the pig is second to none; indeed, to take the whole human race into consideration, it far outstrips all other food-producing animals in existence. The pig is eaten by all the Asiatic tribes, the Australian and African nations. Throughout America and the islands of the seas they abound. Who knows then what influence the improvement of the various breeds in Britain may have upon the world, as the commerce and social intercourse with distant nations shall progress? We are going at railroad speed! let us onward, and prepare for every customer, be he European, Asiatic, African, or American. Britain takes the lead in all social and political progress; her shores will be the resort of all parties seeking improvement in any and every department of progress. The following is the number of pigs shown at the last ten meetings—

Meeting.	Large Breed.	Small Breed.	Extra Stock.	Total Pigs.
Northampton.. 1847	18	24	0	42
York.......... 1848	36	93	8	137
Norwich...... 1849	22	65	4	91
Exeter........ 1850	26	88	1	115
Windsor...... 1851	64	104	0	168
Lewes......... 1852	48	96	0	144
Gloucester.... 1853	38	108	0	146
Lincoln....... 1854	45	92	0	137
Carlisle....... 1855	29	55	0	84
Average of 9 years..	36	81	1	107
Chelmsford.... 1856	35	69	0	104

The classes were well supported. The small-breed classes were never excelled, taking them collectively; and the large breed classes produced some astonishing animals. We shall make a few passing remarks upon those animals that caught our more immediate attention

In Class I.—Boars of a Large Breed,

the Rev. C. T. James's 1st prize boar, No. 568, was much admired. He stands upon short legs, is very thick in form, and broad in frame throughout, excellent in quality for a pig so large, his rump good, but a trifle too low. We seldom see a much better pig, so much weight and good flesh combined, and quite in character with his designated breed. No 560, Mr. Harrison's 2nd prize boar, was greatly admired; he partakes of the small breed in his general character and form, but is of tremendous size and substance; his frame is good, his neck, chine, back, and loin broad, full, and wide throughout, head and ears short, the latter pricking, chaps good and fat, tail too low, stands rather narrow. Mr. F. Birkbeck's boar, No. 558, was commended; he is very large and long in frame, of extraordinary size and length, but neither broad nor deep in form, and coarse in quality. Mr. S. Munro's boar, No. 569, is also commended for his very serviceable qualities.

In Class II.—Boars of a Small Breed.

This is always an interesting class, and we were glad to see a name so deservedly high in public estimation as that of Mr. Crisp at the head of it; he is unquestionably one of our best breeders of pigs of the small breed. He takes the first prize with a very superior animal, No. 589, entirely black, his head short and fine, ears short, thin, and nicely pricky and pointing forward, his chaps full, neck short and fat, chine, back, and loin very broad and level, his frame very deep, and legs short, tail and rump more up and even with back than in most breeds, his hair thin and not too soft, offal fine, and quality of flesh exceedingly good. Mr. England takes second prize with his white boar, "Wharfdale Prince." He is a very complete animal, but not so full and well formed in his general proportions as No. 589, but is very handsome, and of superior quality; his hair soft and lengthy, but ears thin and pricky, face short, chaps very good, shoulders full, and his frame is deep, chine and neck very good; perhaps he would be thought more fashionable than 589—there is more delicacy about him. Price asked £50.

No. 582, Mr. Harrison's boar, was highly commended. He is of very superior quality of flesh; offal fine, and general points very good; but his form not quite true.

No. 596, Mr. Marriott's boar, also received a high commendation. This is a good little animal; his back straight, level, and broad, and his rump and tail are more up than is common; his general frame is not perfect, and his hair is sharp and bristly.

No. 588, Mr. Crisp's boar, was commended. We almost thought he deserved a little more. He is brother to the three breeding sows, No. 663, all in true character.

No. 584, Mr. Scott Hayward's boar, caught our attention. A beautiful white, well-formed pig, deep in frame, with broad level back; good chine and shoulders, and capital loin, and rump up.

No. 597, Mr. Druce's boar, also caught our notice. He is rather larger in his class than most others, and therefore well adapted for improving those too small; his frame is deep and well formed; ears rather too large, but pricky.

No. 595. Lieut.-Colonel Towneley's boar. We were pleased to find the name of Towneley attached to an animal so good in the pig classes. His frame is exceedingly good, with very short hair. This is a very good class.

Class III.—Breeding Sows of a large breed.

In this class the prize of £10 is awarded to Mr. W. B. Wainman for his sow No. 604. This is a very large animal, and highly proportionate for her size; she is 6 ft. 5¼ in. in length; her frame is very deep; her back is level and broad—indeed, well and broadly-formed throughout; her tail too low; quality good. She is the daughter of No. 603, standing—or rather lying, for she cannot stand—in the adjoining pen. This sow (603) is a very remarkable animal, and is the second prize sow at the Carlisle meeting. Her head is short and comparatively fine; her length is astonishing, and her general proportions are good; her weight at Carlisle was 9½ cwt. She has taken ten first prizes, and is now on her return from Paris, accompanied by her ten sucklers. We understood she could not be got up for the judges' inspection.

No. 607, Mr. Blandford's sow, a pure Berkshire, was highly commended, and highly deserved it.

No. 613, the Rev. C. T. James's sow, was also highly commended. She is large, and has an exceedingly good fore-quarter, but is rather light behind, and her tail is low.

Class IV.—Breeding Sows of a small breed.

The prize in this class was awarded to Mr. Scott Hayward for his sow No.631. A very complete and compact animal, of exceedingly good quality of flesh. Her ears are remarkably thin and pretty, snout short, chaps full, neck good; chine, back, and loin broad and full; a very handsome frame, on short legs; tail not quite high enough to our taste. Sold for 35 guineas.

No. 636, Mr. W. Hatton's sow, was highly commended. She was apparently suckling six beautiful pigs. Her proportions and quality of flesh exceedingly good.

No. 642, Mr. Crisp's sow, received also high commendation. She is remarkably full and compact in frame; her head small, snout short, ears thin and well set, neck very thick, chine and back very broad and level, the ribs springing fully out from chine and back; loin very broad, and rump and tail well up, almost level with the back—a point in pigs we should much like to see more attended to. His sow No. 640 was commended; she is sister to the above, of the same litter, and is of the same character throughout her whole frame. His sow No. 639 pleased us much, and betokened the same full form and character; her brother was sold at the late Paris meeting for 50 guineas.

No. 621, Mr. Mangle's sow, was specially commended, as also his sows Nos. 624 and 625 received commendations. Our attention was drawn to them as possessing especial marks for our approval; and our eye rested more particularly on No. 625—an animal of very superior quality and beauty, with a frame of first-rate proportions, a nice head, short snout, good chaps, thin ears, and short well-formed frame, and deep throughout. No. 624 is very similar, with a fuller chine and chest. No. 621 very similar; rather coarser in quality, but a very commendable animal: her age would account for her quality.

No. 644, Mr. J. Marriott's sow, has a surprisingly good fore-quarter; chine and girth deep and full. A truly good class, well sustained in every respect.

Class V.—Pens of three Breeding Sow Pigs, of a large breed.

The Rev. C. T. James again takes the prize for his sows No. 650 in pen. This is a pen of very good animals, and would pass muster in another class, on account of their quality—their ears being long though thin; and their general form fully designates the true breed of the large variety. They have excellent frames, but not quite perfect; very large for their age, supposed to weigh four score lbs. each at 6 months 27 days.

No. 652, Mr. Sadler's sows, were highly commended. They were not quite so true in frame, but of equal quality, and well worthy of the notice they received.

No. 648, Mr. Bowly's sows, received commendation, of which they were well worthy.

Class VI.—Pens of three Breeding Sow Pigs, of a small breed.

The prize of £10 in this class was awarded to Mr. R. H. Watson for his pen of sows No. 656. These were very complete animals in every respect, and denote more expansion of frame than some in this class. One, a great beauty, was sold to the Emperor of the French.

No. 663, Mr. Crisp's pen of three uncommonly symmetrical pigs, and all alike, received a high commendation. We believe these were shown at the Paris meeting.

No. 657, Mr. Watson's pen, was commended. They were very compact and good, and matched well with the prize pen.

No. 658, Mr. Biddell's pen, also received commendation. Somewhat smaller in kind, but very complete in frame, and quality exceedingly good.

No. 662, His Royal Highness Prince Albert's pen, also received commendation. They were three very pretty animals, of excellent quality; rather small comparatively; frames very good and full. They appeared to attract much notice. Two of them were sold to the Emperor of the French, at £13 13s. each.

SPECIAL PRIZES,

GIVEN BY THE LOCAL COMMITTEE AT CHELMSFORD.

Class I.—Thorough-bred Stallions.

Many causes have combined to increase the demand for horses, of late years. Their value is necessarily enhanced, and a stimulus is thus given to breeders. The Agricultural Society has it in its power to confer inestimable advantages, by offering prizes for competition likely to attract horses of the most valuable description. The great object should be, *to present models.* The demand is now increased far beyond the power of supply, and good horses are making fabulous prices. We do not think the Society wise in not responding to so apparent a duty. It should allow the Local Committee and private individuals only to supplement its efforts, not to discharge its office.

It is not so much the thorough-bred stallion of great fame for racing purposes that we wish to attract to our annual shows. The class we require are thorough-bred ones, with power, symmetry, action, temper, constitution; neither the most speedy on the turf, nor the worthless weed. We do not wonder that owners of such animals are averse to submit them to public competition, in cases where confidence cannot always be reposed in the judges. We would not doubt their honour, but their ability. A good judge of a cart-horse is not often a judge at all of such stock as we speak of. If he is not well acquainted with the breeding department, and in the habit of riding to hounds, his judgment cannot be depended upon, for obvious reasons.

It is our firm conviction that breeders desirous to rear horses of the highest value, either as hunters or hacks, must have recourse to thorough-bred sires. We see, in Classes II., III., and IV., a vast number of half-bred and three-parts-bred stallions. They remind us of Mr. Spooner's proposition, in accordance with which we suppose these animals are exhibited—to breed from three-parts-bred sires, capable of carrying sixteen stones with the fleetest hounds, as a means of regenerating our horses. But beyond the fact that three-parts-bred horses will never live with hounds, they will not beget horses equal to themselves! We do not see the utility of encouraging a system of breeding such as this, by the exhibition of such animals. They delude the public: it is simply wrong teaching. The term *thorough-bred* implies "a class of our domestic animals, whether it be of horses, cattle, sheep, or pigs, which is derived through a long race of ancestors, each of which has been selected with the utmost care for those superior qualifications which render them most useful and valuable. The thorough-bred horse undergoes the most severe probation in training and in racing, where his powers of endurance, constitutional stamina, and soundness are unequivocally tested, and he can sustain a greater share of weight and hardship than any other of the species.

The Messrs. Robert and James Moffatt's "British Yeoman" in this class bears off the prize of £30. It will be remembered that Mr. Ferguson's "Ravenhill" stood in his way at Carlisle. He is 16 years old; his head is refined, his neck thin, muscular, and proudly arched, and his crest is firm; his hocks are well turned in; the propelling power in the quarters and thigh is amazingly developed; his feet are broad, deep, and turned out. As to number, there were 13 at Carlisle, but only 8 here; and as respects quality, the show last year was superior. In

Class II., containing Hunting Stallions,

we must mention first and foremost Mr. Adams' "Tom Moody," the winner of the first prize. This is a fine type. His qualifications are—a small, clear, intelligent face, and prominent eyes; a thin muscular neck, shoulders well back, with long arms, short from the knee to the fetlock; pasterns rather long, but not upright; large perfect feet, stout loins, and wide hips, with great length from the latter to his hocks; his girth is great, but it seems to be more in depth than in width, a quality much estimated by a rider that wishes to stick well to his horse. In this class we see several low heels and short shoulders—bad defects for hunters. With regard to "Tom Moody," there may be some suspicion on his dam's side, since her sire was "Smolensko," "a sort never famed for endurance, stoutness of constitution, or substance, but the reverse." A son of his, "Unfortunate Youth," is very deservedly commended. In

Class III.—Coaching Stallions,

there are but five competitors, whereas at Carlisle there were fourteen. Mr. Rayson takes the prize with "Scrivington," a 5 years old bay, which he exhibited at Carlisle. It leaves us nothing to desire for this class of horse. We were enchanted with him last year; and he has come up wonderfully. How nobly he carries his head! Mr. Shaw's "Napoleon" is a fine horse.

Class IV.—Hackney Stallions.

Having stated our opinion about the undesirability of admitting this class of horses, as being liable to mislead the public, we shall merely say the prize was taken by Mr. Jax. Mr. Hammond's "Little Tom" is commended. He must be a sanguine man who can expect to breed hackneys from sires such as "Rochester," from Wisbeach.

Class V.—Hunter Mares.

There is nothing here thought worthy of a prize—an opinion with which we agree. In

Class VI.,

The Rev. Mr. James takes the prize for a very handsome 8 years old brown hackney mare. The Rev. Mr. Beever and Mr. Hammond received commendations. There are some other fine specimens of the hackney mare.

Class VII.—Geldings of any Age, for Hunting Purposes,

consists of four entries. Mr. Barlow receives the prize for a 5 years old black-brown horse. Mr. Bullock's thorough-bred "Black Horse," 22 years old, has many valuable points.

Class VIII.—Geldings under four years old, for Hunting Purposes.

In this class the Earl of Darnley is the successful competitor, winning with a 2 years old chestnut gelding of great symmetry. In

Class IX.—Hackney Geldings of any age,

Mr. Barker bears the prize with "Safety" from his two competitors. While in

Class X.—Hackney Geldings under four years old,

Mr. Barlow wins again with a 2 years old half-bred bay horse, of considerable merit.

We are sorry to have been obliged to pass somewhat hastily over some of the latter classes. It is necessary to give days to the inspection of so large a number of first-class horses, and we can only note the excellences of a few, persuaded that we must pass by unnoticed many that may be peers and peeresses in their own rights. Where there is scarcely an ordinary horse among 196, the work of a reporter is not slight.

FOREIGN STOCK.

We have already made some remarks upon these classes. It is not our purpose to submit the specimens shown to individual criticism. We are truly glad to see them present, and hope to do so for many many years to come. The chief object of the British breeder is to obtain animals most profitable for fatting for market as butcher's meat, subject to the different localities and soils upon which they are to be fatted. In this respect, our friends from the other side of the Channel are not, we think, in a position to cope with us. The animals they have shown us are in many respects very beautiful and very profitable, but as flesh-bearing animals our best breeds are much in advance of them. We are required to breed those animals which will produce the greatest quantity of the most valuable human food in the least time, in proportion to the food consumed and its relative value, be it artificial or natural. Our breeds are by no means well adapted for any one single purpose, but they are suited to the various localities and districts to which experience has allotted them. A shorthorned ox would cut a sorry figure upon the Welsh or Cumberland mountains, nor would a small Welsh ox be the most profitable grazing animal in a good Lincolnshire pasture. Breeders, therefore, have sought to combine and adapt their cattle and their pastures to the most profitable uses—the ox to the pasture, and the pasture to the ox. In this respect, no doubt, our neighbours the French breeders do the same; but the French not being such great consumers of animal food, their attention has not been thus far directed to that principal point in British breeding. We find they are following fast in our steps as consumers of meat, and therefore great attention and profuse expenditure are bestowed in procuring our best animals for such purposes. We hail them as friendly exhibitors at our shows, and as good customers in our prize stock market; and we trust that this amiable rivalry in producing the greatest amount of food and personal comforts for man may long continue to inspire the dwellers on the continent and in this kingdom.

POULTRY.

The number of poultry, as exhibited at the previous meetings, from 1852, are shown in the following table:

Meeting.	Fowls.	Turkeys.	Geese.	Ducks.	Total.
Lewes, 1852	58	1	5	11	75
Gloucester..	229	7	25	31	292
Lincoln	245	7	11	32	295
Carlisle	156	0	5	24	185
Average of four years	172	4	11	24	212
Chelmsford .	162	1	0	21	184

Since the commencement of the exhibition of poultry at these meetings, the numbers have never ranged so low as they do this year. The Dorkings seem here, as well as elsewhere, to lead. They are very good; and there are some truly splendid specimen-birds. They seem to bear a large proportion of good profitable flesh. They occupy three classes, the prizes varying in each from one pound to five. Captain Hornby, R.N., the Rev. Mr. Fellowes, Mr. Godfrey, and Mr. Frost receive respectively the 1st, 2nd, 3rd, and 4th prizes in the first class. In the second, Captain Hornby, R.N., takes the 1st, Mr. Botham the 2nd, Mr. Tod the 3rd, and the Rev. Mr. Shaw the 4th. In the third class, Messrs. Akroyd and Mr. Hobbs are successful.

With respect to Spanish fowls, the stocks of Captain Hornby and Mr. Ed. Bond are in high repute; and Captain Hornby, to sustain his celebrity, takes the 1st prize. The 2nd, 3rd, and 4th are awarded successively to the Rev. Mr. Shaw, Mr. Buncombe, and Mr. Stubbings.

Mrs. Parker again succeeds with her Cochin-China fowls, and takes the 1st prize, as she did at Carlisle, for a cock and two pullets. To the Rev. Mr. Hodson are awarded two prizes, to Mr. Punchard one, and to Mr. Hincks one.

We consider the game fowls most beautiful. The show is large and select. Captain Hornby, R.N., Mr. Adkins (of Birmingham), Mr. Glover, and Mr. Thurnall (of Royston) are rivals and prizetakers.

The gentleman to whom we are indebted for classing the Hamburg breed of fowls—Mr. Dixon, of Bradford—takes no less than five of the eight prizes distributed amongst the four classes devoted to these birds.

There are only three Malay fowls. The only prize is awarded to Mr. Buncombe. This breed does not appear to be in very good esteem. It does not seem suited to those who keep fowls for profit.

Mr. Adkins, who usually shows some beautiful specimens of the Poland breed, is here successful, and takes two out of six prizes. Mr. Bush, of Bath, also carries off two.

Two classes are devoted to turkeys and geese. They are seasonable birds, and therefore refuse to appear.

Of Aylesbury and other ducks, Mr. Webster (of Aylesbury), Mr. Dixon, the Rev. Mr. Fellows, and Mr. Hobbs are exhibitors: they are likewise prizetakers.

BAKEWELL FARMERS' CLUB.—It having been announced by Sir Joseph Paxton, president of the above society, that he would give to the occupier of a farm of 150 acres and upwards, being a member of the above society, who shall have the same in the best state of cultivation, with gates, fences, and premises in the best order, a silver cup value £10; also to the occupier of a farm of above 50 and under 150 acres in extent, with the same conditions as above, a silver cup value £5, the entries being made on the 17th May, the following farms were brought into competition.—Class 1, Hon. G. H. Cavendish, Ashford Hall; Wm. Wyatt, Esq., Foolow; Messrs. Furniss, Birchill; Mr. Jepson, Edensor; Mr. Swaffield, Pilsbury Grange; Mr. Mower, Dale Cottage; Mr. Sybray, Snitterton Hall. Class 2. Mr. Furniss, Pilsley; Mr. Evans, Alport. The committee having been successful in securing three gentlemen eminently qualified as judges, it was arranged they should commence their duties of inspection on the 24th of June last, and their award was made known at the club-room, Bakewell, on the 21st inst., when the following were declared the successful competitors:—Class 1, Messrs. Furniss, Birchill, to receive the prize; and in Class 2, Mr. Furniss, Pilsley, to receive the prize. The whole of the farms appear to have been in a high state of cultivation; some in class 1 the judges speak of in the highest terms of praise, the crops being most magnificent, and the neatness and good order on the farms most admirable. In class 2 the judges regret there was not more competition, and found the fields on both farms too widely apart, rendering it very disadvantageous to the occupiers, and recommended some better arrangement on farms where needed, which would materially facilitate the operations of the occupier. This being the most spirited and interesting competition that ever occurred in North Derbyshire, the result has been looked forward to with much interest in the neighbourhood of Bakewell, and we scarcely need add that great credit is due to the worthy president, who has been mainly instrumental in promoting such honourable competition.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Weekly Council was held on the 25th of June; present, Mr. Miles, M.P., Vice-President, in the chair; Earl of Powis, Lord Berners, Mr. Henry Allen, Mr. Raymond Barker, Mr. Barnett, Mr. Burness, Dr. Calvert, Mr. Cavendish, Colonel Challoner, Mr. Glegg, Mr. Goold, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Majendie, Mr. Monckton, Mr. Newman, Mr. Scott, Prof. Simonds, Mr. Thomas, and Dr. Timm.

Parasites on Domesticated Animals.—Professor Simonds, the Veterinary Inspector of the Society, delivered the concluding part of his lecture on parasites. In the former part he had explained the peculiarities of parasitic insects producing annoyance to live stock on the external covering of the body, or passing into the interior passages through the mouth. In this portion he dwelt on the natural history and characteristics of those more insidious worms which attack the internal organs of the animal body, as well as the alimentary canal. He explained the varied forms of animated structure which these creatures assumed, the successive transformations through which they passed, and the amount of injury in each case which they produced. His lecture was illustrated by coloured drawings highly magnified from microscopic investigations. According to the recent resolution of the Council, the lectures delivered by the Veterinary Inspector will be put by him into manuscript, and submitted to the Journal Committee for publication. On the motion of Mr. Raymond Barker, seconded by Mr. Scott, the best thanks of the Meeting were proposed to Professor Simonds for his interesting and valuable lecture. Mr. Miles, on putting the question, which was carried unanimously, would take care that Professor Simonds' suggestion for a distinct lecture on the subject of Rot in Sheep should be brought under the notice of the Publication Committee. He passed a high eulogium on the clear manner in which the Professor had rendered the scientific details of his subject intelligible. Mr. Newman, of Mamhead, referred to the absence of rot in sheep fed on the water meadows in Devonshire, where no stagnant water remained on them; and Mr. Scott alluded to the Portland water meadows, where the water was stagnant, and on which sheep were put a certain time before being sent to the butcher, for the purpose of having the rot given to them.

A Monthly Council was held on Wednesday, the 2nd of July. The following Members of Council and Governors of the Society were present:—Lord Portman, President, in the Chair, Earl of Powis, Lord Feversham, Sir Edward Hulse, Bart., Sir Charles Gould Morgan, Bart., Sir Archibald Keppel Macdonald, Bart., Sir Robert Price, Bart., M.P., Mr. Raymond Barker, Mr. Barthropp, Mr. Bramston, M.P., Mr. Bullock, Mr. Cavendish, Colonel Challoner, Mr. Evelyn Denison, M.P., Mr. Druce, Mr. Foley, M.P., Mr. Gadesden, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Kinder, Mr. Lawrence, Mr. Milward, Prof. Simonds, Mr. Robert Smith, Colonel Towneley, Mr. Jonas Webb, Mr. Burch Western, and Mr. Wilson of Stowlangtoft.

The following new Members were elected:—

Alcock, Henry, Skipton, Yorkshire.
Baker, John Lake, Hargrave, Kimbolton, Hunts.
Brewster, Sturgeon Nuun, Great Bardfield Lodge, Braintree, Essex.
Brewster, James, Ashford Lodge, Halstead, Essex.
Burton, John Watson, Eye, Suffolk.
Bosworth, Thomas, Nuttall, Nottingham.
Copson, Edward, Brandon, Coventry, Warwickshire.
Garne, William, Kilkenny Farm, Bibury, Fairford, Gloucsh.
Gingell, William, jun., Maisemore, Gloucester.
Goggs, James, Buckhurst Lodge, Woodford, Essex.
Hornby, Captain Windham, R.N., Knowsley Cottage, Prescot.
Inge, Charles Henry, Whittington Hurst, Lichfield, Staffsh.
Jackson, D., Chadwell Place, Grays, Essex.
Lay, Rev. John Ward, Here, Ashburton, Devonshire.
Lawrence, John, Great House, Churchdown, Gloucester.
Malins, William, 60, Montague Square, London.
Matthews, Thomas, Sporle, Swaffham, Norfolk.
Melladew, Thomas, 34, Great Tower Street, London.
Monkton, Edw. Hy. Cradock, Fineshade Abbey, Northamp.
Oswell, Thomas Barnett, Eardiston House, West Felton, Shrewsbury.
Parker, Charles, Binfield, Bracknell, Berks.
Ridley, T. D., Chelmsford, Essex.
Sandham, Henry, Ipswich, Suffolk.
Smijth, Sir Wm. Bowyer, M.P., Hill House, Ongar.
Starkey, John Baynton, Spey Park, Chippenham, Wilts.
Taylor, John, Burton House, Ringwood, Hants.
Villar, James, Leckhampton Farm, Cheltenham.
Walmesley, Richard, Dawlish House, Dorchester, Dorset.
White, Arthur, Ugborough, Devonshire.
Williams, Thomas, Allaston Court, Sydney, Gloucestershire.
Williams, John, Alstone, Cheltenham, Glouc.
Wright, John Francis, Kelvedon Hall, Brentwood, Essex.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the monthly report on the Society's accounts; from which it appeared that the current cash-balance in the hands of the bankers was £3,299.

Guano-Substitute.—The Committee reported the result of their examination into another claim which had been presented in form for the Society's £1,000 Prize, but the competing manure was found to be much inferior to the standard required.

Foreign Jurors.—On the motion of Mr. Evelyn Denison, M.P., seconded by Mr. Fisher Hobbs, a new die was ordered for a gold medal of the value of £10, to be presented in the name of the Society to M. Tisserand, the agricultural commissioner from the French Government, and to each of the Foreign Jurors who should attend the Chelmsford meeting

Implement Judges.—Colonel Challoner, Chairman of the Implement Committee, reported the completion of the list of Judges of Implements for the Chelmsford Meeting.

Member of Council.—On the motion of Mr. Fisher Hobbs, seconded by Mr. Jonas Webb, Mr. Edward Pope, of Great Toller, Dorsetshire, was unanimously elected a member of the Council in the place of the late Mr. Hampden Turner.

Communications from the Earl of Clarendon in reference to the Polish Cattle Disease and Bat Guano; from the authorities of Bath and Salisbury; and from the Directors of the Gobelin Tapestry Works in France; were laid before the Council.

The Council adjourned to their special meeting at Chelmsford, on Friday, the 18th inst.

LORD PORTMAN ON DRAINAGE.

The proposition, "There was and can be no uniform system of drainage," as enunciated by the President of the Royal Agricultural Society at its half-yearly general meeting, held on the 22nd ult., and "that landowners might render great service to the cause of agriculture by making experiments, with a view of assisting tenants who could not afford to waste any of their capital in ascertaining whether or not certain processes of cultivation would prove remunerative"—is one of the highest importance, inasmuch as perfect drainage is the only sure foundation on which improved agriculture can be successfully based. And what increases its value is the weight which it will have in the scale, to equipoise, so to speak, that unsettled state of the public mind on all questions of drainage at the present moment, as exemplified in the diversity of opinion which exists among farmers and draining engineers, in the abortive attempts to set up rival systems of drainage, for the purpose of procuring patronage, in the large sums of money which have been improperly and profitlessly invested in drainage, and in the still larger demands being made upon the pockets of landlords and tenants for capital and redeeming interest. We have long wanted firm and decided support from this quarter, and beg to thank the noble lord for his timely reply to the fallacious views of those who advocate a uniform system of drainage for all sorts of soils. The two principal heads into which the proposition divides itself are—(1) To determine by experiment the depth at which drains should be placed in the soil, the diameter of pipes, and distance between drains; and (2) every individual experiment can only determine the drainage quality of the soil in which it is made.

That the depth of drains, their size, and distance between, should be settled by experiment on a small scale before the general work of draining a field, farm, or estate is commenced, in every different kind of soil, is obvious from the very fact that they are ultimately thus settled in every case, rainy seasons testing the accuracy of every man's work.

Again: the very nature, to be allowed the expression, and object of a drain demand experiment, so do different soils. What, for example, is a drain? Is it an active or a passive agent? Does it discharge more water at three feet below the surface than at two, at four feet than at three, and so on according to depth? What is the soil in a draining sense? Will more water percolate through it to a drain at three feet below the surface than at two? at four feet than at three? And is it true that the greater the depth at which drains are placed, the greater may be the distance between them? These are plain questions in this branch of science, susceptible of an easy answer, all of them having already been solved by expement.

Reviewing them in the order stated, a drain is merely a passive instrument through which water flows by the force of gravitation, analogous to the water of an open ditch or river On the adjacent soil it produces no draining effect whatever, but the contrary; for when bedded in clay, the ramming of the pipes into the bottom, so as to get them "level," as it is said, or in a line, consolidates the soil, producing the opposite effect of drainage.

Also opposed to gravitation are the friction and adhesion of the water in the interior of the pipe, and the action of water percolating into it at the joinings. Friction will be inversely as the diameter of the pipe; and the other forces, directly as the agitation of the flowing current.

The velocity of the water in different drains will consequently be as the square roots of the respective sines of their angles of inclination, minus the effect of these counteracting forces.

And with regard to discharges at different depths, the force of gravitation, strictly speaking, will be inversely as the depth, it being *nil* at the centre of the earth, but for all practical purposes it may be said to be equal or uniform; consequently discharges will be equal, the angles of inclination and counteracting forces being also equal. In other words, drains at the depth of two feet will discharge as much water as those at three feet, other things being equal.

In the next place, with regard to soil, the forces opposed to gravitation will depend upon its quality. Though acting perpendicularly, in no case will the velocity of water in passing through it be accelerated as in passing through the atmosphere or free space, but the contrary, the density of the soil being directly as the depth, generally speaking. In many clay soils the force of affinity is even greater than the force of gravitation, so that no percolation can take place until they are acted upon and changed, as by the sun, &c., &c. In a word, between the two extremes of impervious clay and open gravel there is an innumerable variety of soils, all different from each other in their drainage qualities, and consequently admitting different quantities of water to percolate through them in a given time to drains.

Again: percolation being horizontal, as well as perpendicular, the next question for consideration is—Will more water percolate horizontally through soil at the depth of three feet from the surface than at the depth of two, and at four feet than at three? And to this the obvious answer is that density being directly as depth, percolation will consequently be inversely; in other words, a greater quantity of water will percolate horizontally through any soil of a uniform geological quality at the depth of two feet than at three, and at three than at four.

And, lastly, we come to the conclusion, from the above data, that the deeper drains are placed in the soil, the less must be the distance between them. In other words, that the distance between drains should be inversely as their depths; for as the weight of the superincumbent soil consolidates that on which it rests more closely than itself, it therefore follows that less water will percolate through the soil at the depth of four feet in a given time than at the depth of only three feet.

And with regard to experiments, the second head of our subject, each exemplifies its own results, affording data only applicable to soils similar in every respect; so that every different kind of soil requires a different course of experiments to determine in what manner it can be drained most successfully. And in carrying out experiments for the purpose of ascertaining the proper depth of drains and distance between them, say for one field, a single experiment is not sufficient, not merely because a different depth and distance between might have paid better, but because of the diversity of seasons and climates, a wet one never exemplifying a dry, or *vice versa* in either case.

It will thus be seen, without further detail, that the experimental part of the subject, in order to ascertain what system of drainage will produce the greatest increase of produce to the tenant at the least outlay of capital to the landlord, on every different kind of soil, is not the least important of the two, and that it calls upon the landed interest as a body to carry into practice the invaluable suggestions of Lord Portman without delay.

Under both of the above heads we have supposed the soil of uniform geological quality, being only different in density, which in practice is rather perhaps the exception than the rule, drains being more frequently cut through drifted soils, each diversified in quality, than through uniform, and through diversified layers or stratifications than uniform formations. But conceding this as fact, it does not in the slightest degree alter the established doctrines of applied science as we have given them above, but the contrary, while it more imperatively calls upon the landed interest to have recourse to experiment to ascertain the drainage quality of every soil thus diversified at different depths. At present the misfortune appears to be this—the work of drainage or percolation of the water to the drains taking place under ground, it is therefore imperceptible to the eye, thus leaving the mind to grope in the dark for the facts of the case at issue; and when we consider how few are masters of physical science, controversy need not be wondered at, nor the crude notions which some entertain and publish as their experience. On the other hand, nothing can be further from the utilitarian spirit and exigencies of the age in which we live, than the continual appeal of farmers, draining engineers, and even landlords, to their experience in support of conclusions which never had a being, save in their own imaginations—conclusions which disappear, like the dew off the grass, the moment they are brought to the bar of practice to undergo the test of properly-conducted experiment. While the rhetorical parade of book-learned professors into the regions of speculative geology to settle practical questions is hardly more to the purpose, being to scientific and practical farmers, who comprehend their subject, "as sounding brass and a tinkling cymbal;" for well conducted experiments are as much wanted to ascertain practically the geology of soils, as they are to ascertain their drainage qualities; and as both could be made at one operation, landowners could thus "fell two dogs with one bone," advancing geological and draining science with the improvement of their estates.

ROOT CROPPING.

Sir,—From the greatly increased and rapidly increasing state of our population, together with increased wages and more luxuries among the working classes, any system that will produce an equal quantum of cereal, with a greatly increased supply of animal food, must, and will be, worth a consideration. That such can be effected by the substitution of root crops, instead of bare fallows, I think will not require many arguments to support in these days of modern agriculture, when it is an axiom that root-growing is at the foundation of all good husbandry. Yet the fact is undeniable, that in many parts of our island hundreds of acres of excellent soil are annually laid in bare summer fallows, which, by proper management, might be made to grow (and will pay for the growing) crops of excellent roots. What, then, can be the "cause of this defect" is an idea that will very readily occur to us. The causes may be various; and, perhaps, thereby may hang "a tale." Yet we well know what a strong barrier may be seen through the eye of prejudice; and among the many probable causes, prejudice may not be the least prominent. But, be that as it may, of this we feel satisfied, that if any one who farms on the bare-fallow system could be induced to try and exercise the necessary amount of skill and energy in the trial to grow roots, he would be able to place as much on their credit account as would for ever debar him recurring to the old and partially exploded system.

In this paper we propose to give some account of what we consider to be the best modes of preparing the different soils (light and heavy), together with a series of experiments with manures; and, indeed, embracing everything of essential importance for the successful growth of a paying crop of roots. But, as a preliminary, it may not be out of place to draw up a short statement, showing what in practice will be found nearly the expenditure and returns of the systems of growing wheat after roots, and wheat after bare fallows. And as we truly believe in that line of the poet,

> "That facts are chiels that winna ding,"

for the benefit of our readers who have not had the like opportunities for experiencing the same, we beg to state, that what we advance we have ascertained as facts, borne out by practice.

In different localities different manures may be used for the wheat crop after bare fallow; but supposing if dressed with 15 tons of farm-yard dung per acre, this, and an allowance of artificial manure, say 2 cwt. of guano, would be amply sufficient to grow a good crop of turnips. The soil on heavy lands might perhaps require some extra tillage to bring it into a proper tilth for roots more than would be necessary if for wheat only. In practice the items would be nearly as follows:

	£	s.	d.
Ploughing and grubbing..........	0	10	0
Harrowing, rolling, and ridging....	0	10	0
Guano, 2 cwt....................	1	2	0
Seed, and sowing................	0	3	6
Hoeing and scuffling	0	10	6

Making £2 16s. per acre, and this on the most unfavourable soils; on more friable and loamy soils the working expenses would be materially lessened. Upon the supposition that all the turnips are carted off, which on clay lands would be preferable, I assume that a top-dressing with 2 cwt. of guano will restore the fertility of the soil, and produce as much wheat as if in bare fallow:

	£	s.	d.
Guano, 2 cwt....................	1	2	0
Pulling and carting.............,	0	16	6
Expenses as above	2	16	0

Making in all £4 14s. 6d., for which, with proper management, I should expect 25 tons of bulbs per acre; but, to keep under, say 20 tons. And as I know for a certainty that, if properly husbanded, 1 ton of roots consumed with straw only will, in a good thriving animal, produce 1 stone of beef. We have here elements for the production of 20 stones of beef per acre, and, at 7s. per stone, gives £7; from which deduct £4 14s. 6d., leaves us clear £2 5s. 6d., without taking into calculation the value of the tops, and which, indeed, are of considerable value; and so great an authority as the late Prof. Johnson says "they are generally as nutritious as the bulbs." Nor have we taken into our calculation the manure made in the consumption, the value of which is far from despicable; but part of it may go for labour in cutting and serving the cattle (which costs about 6d. per ton), and the remainder to compensate for anything in the way of a bad turnip season.

From this statement (and it is rather under than over) it will be seen how great the advantage of having the fallows in roots, instead of lying idle. But it must be borne in mind that a greater amount of capital, energy, and determination is absolutely necessary before such an amount as stated can come to the proper side of the balance sheet; and things which seem trifling are sometimes of essential importance in root cropping. Take, for example, in autumn, when the turnips have attained their growth and the weather favourable, not a minute should be lost in having them carted off. • Neglect in this instance might entail results as disastrous to the system as under proper management our statement has been favourable to it. Suppose the roots are not got off in proper season, and when the ground is dry, in such case the risk of losing a season to sow wheat with advantage is increased; if wet come you perhaps altogether lose a season, or by an expenditure of horse power double what would have been in dry weather, you drag them off, cutting up the land so much as nearly to waste it for either wheat or barley for the season.

It is such and similiar occurrences arising wholly from a want of proper determination and energy that tends to throw odium on the system—a system that we have shown to be so fraught with advantage to the farmer—a system profitable to the proprietor, affording him more in the shape of rent; and likewise the extra amount of manure must eventually enrich and increase the permanent value of his soil—and a system advantageous to the community at large, by greatly increasing the supply of animal food.

Having shown the manifest advantage of root-growing, we now propose to point out some of the best practical methods for attaining that end; but as the means of preparing soils must materially depend on the nature and constituents of that soil, it is evident that what might be good and profitable management on one variety of soil might require considerable modification to meet the wants and requirements of another differently constituted, and a system of culture that on light friable loams might be found advantageous; the same, without a material difference of manipulation, on strong soils might be worthless. But to give minute directions for the culture of many different varieties need not be necessary; suffice to class the many degrees of tenacity and texture under two separate heads, Loam and Clay Soils, and give outlines of a system of tillage best adapted and practically advantageous to each; and any variations from, or approaches to, either can be adapted to suit varied circumstances.

I am, yours respectfully,

Upleatham, Redcar, Yorkshire, WM. J. MOSCROP.
June 20th.

CLUB-HOUSES FOR THE RURAL DISTRICTS.

Apropos of Mr. Reed's important letter upon the subject of Village Libraries and Reading-Rooms, I wish to publish certain facts relating to the formation of a labourers' club in Dorsetshire, which have recently come to my knowledge.

This is called the Charlton Club, from being established at Charlton-Marshall. I give the whereabouts, because some, reading this letter, will probably like to possess the full details from Mr. Bastard, its benevolent founder.

The idea seems to have been suggested to him whilst his attention was drawn to the little benefit accruing from mechanics' institutes to labourers, or even to mechanics; and as he attributed the ill success to the fact that these institutions provided solely for intellectual recreation, and paid no regard to the physical comfort of the class for which they were designed, he determined to see whether a club might not be raised that would provide for both.

The arguments Mr. Reed made use of, in advocating the establishment of village libraries and reading-rooms, of course apply here, although Mr. Bastard certainly proposes to aliment the body as well as the mind; indeed, he relies for success upon the means he adopts to supply physical comfort.

He takes a very rational view of the case, in my opinion: "What," says he, "are the real wants of the least-favoured of the industrious classes? Are they not physical? Do they not need shelter, warmth, food, light, conversation, and sympathy? Attract them by supplies of these, and then take the opportunity to form and elevate their habits, tastes, and aims." It is a sad truth, but truth it is, that but little real comfort is enjoyed by rural labourers in their homes, and there is the real secret of the publicans' profits; they know the wants of the labouring poor, amongst whom they locate, and busily set about to provide accordingly. Is not their success matter of pain to all of us.

Some months since Mr. Bastard delivered a lecture upon his plan, from which I shall make one or two extracts:—

"For more than twenty years," says he, "both in my own and in foreign countries, I have participated in the advantage of club-houses, the well-established success of which has often caused me to wonder why they should have been confined so exclusively to the rich; and this leads me to the main point to which I have to draw attention—that of the applicability of club-houses to the circumstances of the labouring classes. The principle on which these establishments are founded is simply the combination of several to obtain ends for which the means of individuals are insufficient; and the grand objects of attainment of those at present existing are—first, personal comfort and convenience; and next, intellectual advantages. The first experiments were naturally made by persons who are, comparatively speaking, rich; but their success exhibits the soundness of the principle on which their clubs are conducted; and the question of the day is, whether the same thing may not be done by persons of small, as well as by those of large means. For myself I have, after long consideration, come to the conclusion that the club-house system is applicable to the circumstances of the poor; and it was faith in its being a plan that would work, which induced me to erect the building for a trial of it."

We know the spirit of association, upon which the club system depends, to be as fully possessed by the poor as by the rich; and there can be no reason to doubt the success of such effort as this gentleman is making. Club-houses, simply because they provide comforts and conveniences, should be *most* suited to the poorer classes, because from their own individual resources they cannot command them. This combination is often tried by the poor themselves with good effect. They form a fund—five or six families joining together—and buy bread, corn, and coals, &c., in large quantities, and at wholesale price. But the value of the system has recently been displayed in a much more perfect and satisfactory manner by the factory girls at Lowell, in Massachusetts. The benefit of combination to secure certain ends beyond the reach of individuals, are clearly shown. A number of these girls "chumming" hire a house, and elect a housekeeper, and manage all their affairs amongst themselves, with the greatest efficiency and decorum; they in fact know all the convenience and luxury of a club.

It appears that the promoter of this scheme tendered his assistance on certain conditions, which are embodied in the regulations. They were for securing decorous conduct; for preventing the supply of intoxicating liquors, and also smoking; for admitting female members; and for opening the club on Sunday afternoons.

I can quite understand why such conditions should tell a little against the club in the first instance. The prohibition of beer and tobacco with some veteran topers and smokers would be considered quite an outrage upon the liberties of Englishmen. For my part I think Mr. Bastard quite justified in the course he has adopted so far, and especially as he desires to make the club a place of resort for both sexes: men, women, beer and tobacco, is a combination he has done well to set his face against. To have yielded so far to the tastes of those whom he was seeking to elevate, would have totally ruined his hopes of success. The freedom of the club from the abominable smell of stale tobacco must impart a charm to it; maybe it will make men more alive to the benefits of sanitation, and the ill effects of the proximity of pigstyes and cesspools.

And so long as public-houses are open on the sabbath, I certainly do not see why this club, which is intended to oppose and subvert their prejudicial influence, should be closed. It should not be opened so as to interfere with religious services; but so soon as the main services of the day are over, it might be an act of wisdom to admit those who were wandering from home, and might possibly get into worse company elsewhere. This would entirely depend upon the character and habits of the population. In some districts I can imagine it would be wrong to close the club, in others wrong to open it, on Sundays. It is, I think, most important that we should, as Englishmen, set our faces against the desecration of the sabbath. On the continent they have tampered with this beneficent ordinance; and the consequence is, that in many parts the only change it has brought to the poor is that they now labour seven days instead of six; this step has thrown more human labour into the market, and proportionally reduced its price! The poor have thus lost the day's *rest* they sought to gain, and are actually worse paid for seven days' work than they were for six.

With respect to the admission of females to a participation in the benefits of this institution, the project presents to my mind, I confess, considerable difficulties. The main object is its novelty. Being contrary to custom, we scarcely know how it will work. I shall, for one, be glad to hear that the measure is successful, because I desire to see women practically admitted to be a half of the human creation, having like instincts and impulses with their "lords." The club-house will not be much used by married women, but for single women there may be advantages connected with it that shall thoroughly counterbalance those abuses that may probably arise from such a novel co-mingling of the sexes.

The building erected by Mr. Bastard possesses the following accommodation:—A hall for refreshments, talking, and reading, 29 ft. by 20 ft., opening into a reading and writing-room, 20 ft. by 14 ft.; a bread and book shop; a baking-room; a kitchen and a sitting-room, 12 ft. by 12 ft. Over the kitchen and reading-room are three apartments, two being for the kousekeeper's use, and the other intended as a separate sitting-room for the female members. Between the hall and reading-room are folding doors, enabling the two rooms to be thrown into one, for general meetings.

The management of affairs, and the disposal of funds, are entrusted to a committee of thirteen and a chairman, to be chosen from the members at their annual meetings. The admission fee is sixpence, and each male member pays three-halfpence, and each female member one penny per week, these weekly payments being one week in advance. The refreshments provided consist of tea, coffee, milk, effervescent drinks, sugar, bread, butter, cheese, fruit, &c., soup and cold meat, all at prices to be fixed by the committee, a little exceeding prime cost, so as to pay the cost of fuel and service. The London newspapers supplied are, one daily, one weekly, and one provincial, and four weekly periodicals. Besides these, there are other papers sent by friends a few days after publication, and a library consisting of 500 volumes has been collected. The house is open from seven in the morning till ten o'clock in the evening. Due regulations are made for the maintenance of quietness, order, and decorous conduct.

The number of members may be stated at 80. From 15 to 20 may commonly be seen in the club of an evening, reading, talking, or playing draughts; and of these, three or four are usually females, to whose presence in practice there does not seem to be any objection.

I will close with another extract from Mr. Bastard's lecture:—

"With regard to the financial success of the club, I have only to state that I never could reckon on that, in a village of only 450 inhabitants, with little probability of drawing many members from the neighbourhood. My object was to supply labourers with a place where they might find a certain amount of comfort, and an opportunity of social intercourse in a way that would conduce to their moral elevation, and also to test the applicability of the club-house system to their circumstances, by experiment. I must add my belief that, whenever a similar attempt is made, the promoters must reckon on having generally to provide so much capital as will free the members from the charge of rent. In large towns, where wages are good and labourers numerous, I think it possible that they may obtain a club-house for themselves; and at some future time, perhaps, we may hope that the wages and the moral condition of labourers of every kind will be sufficiently raised to enable them to support such establishments, independently of aid."

This, too, is my oft-repeated hope, and I am more and more convinced every year I live that exertions such as Mr. Bastard is nobly making, will not fail in producing the fruit he desires to see.

Men are unhappily, however, more given to a desire for splendid generalizations in this age than to isolated effort. In the one instance the work is often unseen and accompanied with drudgery, and the individual probably lost sight of, while to the other is attached a recognised degree of personal importance. The promise of mighty and speedy consequences from mighty organizations run away with the better judgment of the philanthropists of our day, who, would they but work singly, would do essential service.

Much force is now wasted in organizing—a truth which reminds one of the man who, having to write upon a certain subject, piles books upon books around him with reference to it, and finally, from mere confusion, never writes at all. Those who strive to solve the condition-of-the-poor question, let them not lose much time in surveying the ground and organizing their forces; they must grapple with the difficulty at once, trusting to the good heart that carries them to the contest to bring them triumphantly through it.

F. R. S.

THE FARMER MAY GATHER LESSONS FROM THE GARDENERS' MANAGEMENT.

In vino veritas: which we shall translate—The farmer may learn some lessons in a vinery. "Aye," says a sharp reader, "you mean that he is to sulphur his crops to prevent mildew." No; we do not refer to such an application of horticultural practice to agriculture: for though hop-growers can afford to sulphur the costly plants twining upon their countless poles; and though it is possible that after the perfection of a water-drill some clever patentee may invent a travelling machine for simultaneously syringing and dusting with sulphur, or perhaps for sulphuring alone on dewy mornings our rows of mildewy swedes; though science may discover dressings capable of saving the potato plant when in full growth, and perhaps provide us with an anti-mildew powder, which we may sow upon our over-luxuriant, sappy-stemmed wheat crops when wet with a July shower—yet we suppose the expense of such applications would effectually preclude their general use.

Consider, in the first place, that agricultural science has received great help from the observation of vines and their culture. It was a branch of a living vine which a French philosopher inclosed in a glass tube, and by passing a current of air and carbonic-acid through the tube and thence into lime-water, found (from the effects upon the latter) that the branch absorbed the carbonic-acid when in the sunlight, but let it pass through the tube when in darkness. It was to the stem of a vine cut off about two feet and a half from the ground, that Hales fixed a mercurial gauge to ascertain the pressure of the ascending sap, proving by experiment that its force was able to sustain a column of mercury thirty-eight inches, or a column of water more than forty-three feet high.

It was from observing the vine-culture of Languedoc that Jethro Tull lighted upon great discoveries, not in vegetable physiology only, but in the functions of the soil itself. He found that as mechanical tillage alone, without manuring, enabled the ground to produce an endless succession of annual crops of grapes and wood, so it could yield wheat, both grain and straw, year after year under his horse-hoeing husbandry. And as the ancient Romans hoed their vineyards after the time of blossoming in order to fill the fruit, he adopted precisely the same practice in order to fill the ear. His drill-husbandry has introduced system into fields; and now there is not an intelligent farmer who does not stimulate the growth of his root or green crops by stirring the earth between their rows.

And just as grape culture excited inquiry in the mind of Tull, so in more recent days—as we instanced a week or two ago—trenching an old vineyard six feet deep to prepare it for fresh planting, opened up a new view of the subsoil to a thoughtful eye.

And still further, it seems that we are likely to get some insight into the origin of such important things as the potato-blight, wheat-mildew, and turnip-decay from investigation into the causes of the vine disease. In a pamphlet lately published by Saunders and Otley, entitled, "An inquiry into the Vine Fungus, with suggestions as to a remedy, by a 23 years' resident in Portugal," a considerable strength of evidence is adduced in support of the author's opinion, that in the vineyards of Portugal, "the proximate cause of the so-called disease is to be found in some abnormal condition of the atmosphere, in conjunction with a diminished power of resistance, from other causes, in the vine itself:" that the fungus is derived from the atmosphere, and that the vines are predisposed to its attacks on account of their constitution having been weakened by bad management.

At Oporto, in the year 1854, he succeeded in ripening all his grapes by carefully clearing off the fungus with a soft-haired painter's brush, while scarcely a grape was produced elsewhere in the city. He concluded, therefore, that the vines themselves were not in a state of disease, but that the fungus emanated from the atmosphere. "It has also been observed that on vines infected with the disease, bunches of grapes and branches of the vine well-sheltered, especially from above, have escaped, while all the rest of the grapes on the same vine have been destroyed. Singularly enough, bunches of grapes growing near the earth, and even resting on it, have not been touched by the fungus, while the rest of the vine standing higher in the air has suffered severely." How then have the vines been weakened and rendered unable to resist the attacks of the subtle enemy? In the Alto Douro they never manure; and the amount of produce carried off at the end of every vintage is not greater than can be supplied, in ordinary years, by the disintegration of the soil effected by tillage in hoeing and breaking it up, so as to expose it to the constant action of the weather. To assist these operations, rain is most essential during the winter, to act as a solvent, in reducing the natural nourishment derived from the soil to a state in which the roots of the vines can absorb it in spring. If, therefore, these important conditions should be wanting, not only for one season, or even two, but for three successive winters, we should then have an unusual, and perhaps unprecedented cause for a weakly condition of the vines. The writer of the pamphlet proceeds to show that not only this was the case in 1851 and the two previous years, but that an extraordinary concurrence of other disadvantages, commercial as well as physical, united to debilitate and endanger the vines. The years 1846, '47 and '48 were noted for an excessive over-production, which could not but be a cause of future weakness. "The three following years brought no rain of any consequence; for three successive months in the depth of each winter we had dry easterly winds, sunshine, and no rain whatever. Wells that had never been known to be dry gave no water. * * * * * A large proportion of the farmers being poor, from the low prices obtained for their vines for some years previous to 1851, did not or could not afford the expense of the labour necessary to effectually prune their vines, renew their stocks, and properly disintegrate the soil."

The winter of 1851-52 excessive rains descended in floods; the spring was very late; the growth of the vines became rank and out of all moderation; and being little pruned, they were well prepared to become an easy prey to the deadly fungus which fastened upon them in the following year.

The remedies he proposes are those calculated to strengthen rather than to force produce out of the vines; such as judicious pruning, tillage of the ground, the burying of all superfluous shoots and branches in a green state, &c. And he expresses his distrust of strong animal manures, while insisting upon a due culture and disintegration of the soil as the main point both for restoring and preserving the health and stamina of the vineyards.

Now to draw a lesson from this—what is the best course yet recommended with respect to the fungoid diseases and other mysterious affections of the farmer's crops, his wheat, turnip, and potatoes? Why nothing else than that we should trust more to a plain substantial diet for them, than to all sorts of gross and putrid manures; that we should feed them as much as possible with natural, rather than with artificial, food; that we should till more and more, wherever it is practicable to do so.

When we say that a farmer may gather lessons from the gardener's management of his vines, our readers may perhaps wonder how we can compare a greenhouse to a field, and whether a grape-vine is most like a mangold-wurzel, a wheat-plant, or a bean-stalk, or resembling rather the pea because of its tendrils. We shall not attempt to force comparisons which do not exist; but, inasmuch as all vegetables are plants—the vine as well as the clover, the oak as well as the cabbage—there are certain general principles of treatment which apply to all alike. And it necessarily follows that when we inclose plants in a house, shutting them out from any influences of external nature, except just so many and in such measure as we choose to admit, we sooner come to know what their requirements are than when we simply leave them in the open atmosphere, subject to the uncontrolled light, temperature, moisture, and air which play upon the surface of the earth.

Look at the "border." Is the gardener content to plant his vines in land only ploughed, cleaned of couch, and harrowed fine? Why, to watch the preparation of the plot, you would think he was constructing a filtering-bed on a large scale: *and so he is*—laying materials in strata that shall abstract all the organic, gaseous riches from the downward percolating rain-fall. There is first a foundation of flagstone, with a drain round it, so as to secure a perfect underdrainage; on this there is perhaps a foot-and-a-half thickness of broken bricks, lumps of old mortar, etc.; and then, lying upon a thin layer of grass-sod, which prevents its sinking down and choking the interstices of the rough material, comes the deep staple of artificial soil, composed of rich turfy loam, leaf-mould, and rotten dung, mingled with lime-rubbish, charcoal, bones, and gravel, to keep it open. With an occasional forking or breaking of the crust which wet and dry weather congeals upon the surface, here is ample provision for insuring a free and open texture in the ground for the searching of the interminable roots, the infiltration of water, and the descent of currents of air; and the substances collected together are calculated to afford continual supplies of the minerals most needed by the vines, viz., lime, potash, phosphoric acid, etc. Not a weed is suffered to pollute the limits of the earth-brown inclosure; in order that every particle of available nutriment of the soil or the atmosphere may be reserved and appropriated for the vines alone.

Would that every English farmer perceived the value of the principles upon which the border is made—the advantage of having his strong land converted by deep drainage, deep-tillage, and vegetable manuring into such a porous filter-bed, in order to make use of the mineral food in the soil, and absorb organic food from the atmosphere; the necessity for replenishing his light land with the particular manures which can best supply the hungry rootlets of his crops.

Then in the house: how exactly are the syringing, and ventilation, and temperature, and even the humidity of the air, timed and tempered to the wants of the growing plants or ripening fruit! How different the training and pruning of these branches—the cultivator regulating the proportion of wood and number of fruit-buds according to the special condition and relative vital force of each vine—from the tangled, unkempt, wilful growth of vines left to themselves upon the front of many a dwelling-house! and how magnificent in profusion those massive bunches of well-thinned, plump, luscious grapes, compared with the pitiful sour berries that choke and shrink one another above many a parlour window! Every branch, you see, has room to grow; every spur has ample space for developing leaf and bud; every leaf has a place to breathe in; every bunch depends freely, without shouldering a neighbour;

every separate grape fills and swells with choicest nectar, untouched and unrestrained by even one of the myriad berries around it.

Now go to the field; and see that every plant has opportunity to develope its strength. Drill wheat widely and sow thinly; let leguminous crops have abundance of sunlight and air, so that each stem, vigorous and healthy to the very root, may flower and pod prolifically; let swedes and mangolds and cabbages expand their leaves and swell their fleshy bulbs or solid hearts. In some of our famous wheat-districts the farmers declare that they cannot grow or ripen greater crops than they now do; that, in spite of Mr. Lawes, they apply guano only to get a heavier bulk of straw, with a crop laid flat before harvest, and a produce which gladdens only the heart of the chickens. It is not an immense mass of flaccid stems, but a fewer number of stout, stiff stalks, able to spring back from the bending of fierce winds and July storms, and to bear up in the sunshine their massy ears of bold grain, that we most of all want and should endeavour to obtain. They *are* obtained in many places on similar wheat land.

Again, watch the intelligent vine-grower diligently thinning his grapes. He looks for produce not in seeds or grains (as the corn-grower does), but in pounds of juice. Now he may obtain the same total quantity of syrup in his globular fruit either by having a great number of grapes individually small, or a less number of grapes proportionately larger. And, irrespective of any increased market value per pound for the finer fruit, he has a potent reason for choosing the latter kind of yield, in spite of the additionally arduous labour it involves in repeated thinning. The vital power of the vines, he tells you, is not so much taxed in secreting the watery juice as in maturing the reproductive and life-impregnated seeds; and, as a small grape contains as many seeds as a large one, he husbands the energies and resources of the vines by taking a crop richest in juice and scantiest in seeds, thus realizing the greatest value of produce with the least possible exhaustion of the plants bearing it.

Well, what lesson do we infer from this?—that a farmer is to employ hundreds of tailors and sempstresses to snip off with their scissors half the kernels of his wheat-ears in order to force more flour into the rest? No; copy not the identical practice; but conform your husbandry to the principle on which it is founded—that the maturity of the seeds is the great effort in the life of a plant. A farmer's plants, to be sure, last but a year; but, instead of husbanding the strength of the plant, he should economize for future use the resources of the soil it grows in. Consider the wheat plant: for many months of its growth as tender blade, spindling stem, and luxuriant flag, although immense quantities of organic matter are being imbibed and absorbed and built up into solid material within it, yet it has accumulated in the completed straw and decayed flags an amount of mineral substances only five times greater than that which is accumulated within a few weeks in the quickly-formed grain. The straw of one acre on an average crop of wheat obtains from the soil 150 lbs. of mineral food in 40 weeks, while the grain gets 25 lbs. in five or six weeks. But it is not alone the continued and increased avidity of the plant for mineral food up to the latest period of vegetation that makes the formation of the grain particularly exhaustive; it is rather the differing character of the ingredients demanded by the filling ear. Two-thirds of the mineral matter in the straw consists of silica, which is superabundant in most soils; potash, 12 per cent.; lime, 6 per cent.; phosphoric acid, 5 per cent.; sulphuric acid, 4 per cent.; magnesia, 3 per cent.: whilst the mineral constituents of the grain comprise not 5, but 46 per cent. of phosphoric acid; potash, 30 per cent.; magnesia, 12 per cent.; soda, 4 per cent.; lime, 3 per cent.; silica, only 3 instead of 68 per cent. So that the grain abstracts from the land the largest portion of the alkalies and most of the valuable phosphoric-acid which the plant draws out of the soil.

The conclusion from this fact then is, that we ought to make ample provision for supplying the plant with its required food during the final stage of growth and ripening; in other words, we should take care that the roots, now at their deepest burrowings in the earth, find there a well-stored and thoroughly-prepared mould, instead of a ploughshare-polished subsoil impervious to their sucking spongioles, and bare of any sustenance for their urgent appetites. When shall we really follow out the deep culture taught us in the very circumstance that the seed has to "take root downward" before it can "bear fruit upward"—at any rate to the amount of "thirty, sixty, or a hundredfold?"

GOVERNMENT EXPERIMENTS WITH BOYDELL'S TRACTION-ENGINE.

An important series of experiments were commenced on Tuesday last by the Select Committee of the Board of Ordnance with the above engine, to test its traction force as a substitute for artillery horses; and the results, so far as gone, greatly exceed our expectations—sanguine as they have ever been. The experiments of the 24th instant are two in number, and as follows:—

First. The engine, with a sufficiency of water for a good long yoking, weighing 9 tons, hauled a heavy siege gun (5 tons 12 cwt.), carriage and tender (2 tons 7 cwt.), and 16 men (say 1 ton 2 cwt.); making a total of 18 tons including the engine itself, from the Arsenal up Barrage-road to Plumstead Common, and down the steep incline to Waterman's-fields in return! The steepest part of the ascent is 1 in 10, and of the descent 1 in 8 or thereby, both inclinations having to be remeasured. Of the two, descending was considered by all present the master-part of this experiment, no break or drag being upon any of the wheels; those of the gun-carriage and tender (9 tons) being without endless rails: for in the very steepest part of the inclination our modern megatherium war-horse had as much control over his ponderous load as is to be seen in the parallel case of the steam-hammer, standing rock-fast, like a statue, the instant the order, "Stop her!" was given—a feat which even few of the admirers of this new-fangled innovation expected to see performed in so triumphant a manner. Moreover, in going up Barrage-road the wheels of the gun-carriage sunk from 1 to 3 inches in the shingle, of which the road was made—a circumstance which greatly added to the draught; nevertheless the war-horse dauntlessly took the ascent with that dignity of bearing and self-confidence which characterizes the genius of steam when master of its work, and would soon have enabled the men to have planted the huge gun on the top of Shooter's-hill, had not Colonel Tulloch ordered him down the steep descent to try his mettle there.

The second experiment was in hauling a gun of the same size over a marshy bog in the lower part of the Arsenal grounds, a bog too soft to bear the feet of horses when pulling, or even when standing. The wheels of the gun-carriage in this case were furnished with rails, and the engine was yoked to the gun by means of a rope, capable (it was said) of sustaining a strain of ten tons. This rope was broke by fair pulling several times, owing to abrupt inequalities in the ground which the wheels were run against, and not the best of engineering; but these eventually were both overcome, 2,040lbs. pressure of steam on both pistons, or 60lbs. to the square inch, dragging 18 tons triumphantly over the quagmire!—a result which all the artillery-horses in her Majesty's service could not have effected.

Such are the two first experiments made by Mr. Boydell before the Select Committee of the Board of Ordnance. That they solve the proposition of farm-cartage, as well as that of artillery-traction, will readily be admitted by all who comprehend the simple elements of mechanical science; hence their importance at the present moment to her Majesty's Government, to the Royal Agricultural Society, the readers of the *Mark Lane Express*, and the public generally.

In these concluding observations we are only directing our reader's attention to first principles involved, and not to the details of mechanism; which, although greatly improved since the Willesden experiments, are still very defective; but the Woolwich experiments, with all these defects against them, place the propositions of the endless railway, their applicability to the wheels of portable engines for self-locomotion, and the application of the motor force to or gearing of the crank-shaft pinion in the top of the 96-toothed wheel, beyond the cavil of prejudice and the book-rules of engineers, who have never crossed *pons assinorum.* With regard to the defects just alluded to, it is but justice to the firm of Boydell and Glasier to say, that they are being removed as fast as discovered. Rome was not built in one day; and therefore the inventor of the "endless railway" is justly entitled to the usual allowance of time to carry out his invention for the various uses to which it is adapted. This is accorded to all great projects of so novel and comprehensive a kind as it is; and why should such be denied to him? The hasty conclusions at which unmechanical minds, so to speak, have arrived at, we can readily excuse; but no one can excuse himself who shuts his eyes to the experiments we have just brought before our readers.

W. B.

INDUSTRIAL RESOURCES OF RUSSIA.

The termination of war, and the declaration of the Emperor Alexander the Second that his desire was to cultivate the arts of peace, render an inquiry into the extent and nature of the industrial resources of the Russian Empire one of absorbing interest. Since the accession of the late Czar Nicholas to the throne, a large amount of statistical information has been collected by German and native writers, and the archives of government have been enriched by various dissertations on some of the most important branches of political economy. These ample materials have the advantage of being authentic, having been mainly collected and arranged by the official functionaries of the Crown, chiefly for the purpose of arriving at a full and correct knowledge of the state of agriculture on the imperial domains, which contain a peasant or serf population of 10,583,638 males, and of 11,641,437 females, the total of both sexes amounting to 22,225,075 souls. The late Emperor certainly was anxious to ameliorate their condition, and did so to a considerable extent, though constantly thwarted by the proprietary classes, ever jealous of State intervention in all that relates to the "hereditary bondsmen." One of the greatest social calamities in Russia is the absence of that class whom we designate "country gentlemen." The Muscovite nobility hold more than one-half of the cultivated land, and, of both sexes located upon it, 24,000,000 of serfs; but there is not amongst them a Coke of Holkham, a Lord Spencer, an Earl Ducie, or a Philip Pusey. Between the owners and cultivators of the soil there are no sympathies, no friendly feelings, no neighbourly associations. A love of rural economy has no existence. In fact, the Russians never passed through an age of chivalry which has left so many profound impressions on Western Europe, and which are still retained in scarcely diminished strength in England. They never had feudal castles with moats and keeps, parks and forests, the excitement of the chase and the tournament, or the bracing exercise of hawk and hound, when gentle and simple shared in the same animating sports, and which held all together as members of one family. Hence they have no local reminiscences to cherish, no local traditions to influence their ambition. They have, indeed, country houses, but rarely visit them. They have no family pride in their domains, but look upon them as a fundholder looks on consols—as a mere source of income. The serfs detest their presence, and the landlords naturally shun those who hate them. They sell their property for a slight gain, and both land and serfs are handed over to new masters.

We have offered these introductory remarks that our readers may be prepared to cast aside all English ideas in forming their criticism on the facts about to be stated in reference to Russian agriculture, the vastly preponderating source of its present wealth. The urban population is also in a very different condition from that of England. With us there is a well-defined industrial separation between town and country, and the population of the former exceeds that of the rural districts. The very reverse is the case in Russia, for according to the census of 1838, now but little modified relatively, the towns of Russia only contained one-eleventh of the population. In 638 towns it was ascertained that there were no more than 4,745,622 inhabitants, while the entire population of Russia at the same date was estimated at 54,000,000; but this figure did not include the mountaineers of the Caucasus, the soldiers and their families, or the peoples of Poland and Finland. M. de Kœppen enumerates the army and navy, the cantonists, and all dependent on the administration of the united services, at a million and a half. In the archives of Herman for the year 1845, the entire population of all the towns and burgs of any importance is put down at 4,906,310, and of these 246,000 belong to the nobles and the Czar, and 78,480 to the church, these being serfs.

As industrial resources lie dormant till they come into contact with industrial power, in an inquiry of this nature, which relates to a very scattered population spread over sixteen hundred leagues of territory, the ratio of population to the area of surface, or, reckoning after the Russian mode of computation, to the *verst*, which is two-thirds of an English mile, ought to be determined. This is extremely diversified in different localities. The real power of Russia is in its centre, that is, in the government of Moscow, which is the best-peopled of all the governments into which the country is divided. There each square verst is computed to contain forty-eight inhabitants; whereas in that of St. Petersburg the density of the population is only from sixteen to seventeen souls on the same space; in that of Novogorod it is less than nine; in that of Archangel, resting on the White Sea and the Frozen Ocean, it dwindles to one inhabitant in three versts; and at the other end of the empire, in the government of Astracan, near the mouths of the Volga, each verst contains but two inhabitants at the utmost. It is in the governments grouped about Moscow that population is densest; and even there it is sparse compared with England. By adding together the fourteen governments of the centre, comprised for the most part within ancient Russia Major, we find an agglomeration of 17,000,000 souls concentrated on a space of about 600,000 square versts, or an area equal to France, Belgium, and the Netherlands taken together; whereas all European Russia, on a superficies of nearly 5,000,000 square versts—that is to say, eight times greater—has scarcely more than three times the population.

The state of agriculture in all countries depends as much on climate and on quality of soil as on the industry of the inhabitants. From the immense extent of the Russian empire, an extreme diversity of climate exists, which necessarily causes a great difference in agricultural processes. According to M. Meyendorff, the culture of wheat stops at the 58th degree of latitude; of oats, at the 63rd; of rye, at the 65th; and of barley, at the 67th degree. The birch tree does not flourish beyond the 69th; the pine and the larch beyond the 68th; the fir is arrested at the 67th; and the alder at the 63rd degree.

The statistical writers have divided the whole country into zones, corresponding with climates, to afford the basis for the classification of industrial products. The first of these geographical divisions relates to the section which includes the governments of Archangel and of Vologda, to which in strictness must be added a portion of the government of Olonetz. This comprises the territory inclining towards the White Sea, and limited towards the north both by that sea and the Frozen Ocean. The chain of hills which forms the southern frontier of this zone commences to the south of Lake Onega, where it takes the form of table-land, and runs away towards the north-east up to the Oural Mountains. This zone, with the exception of its northern portion, which commences nearly under the 69th degree of latitude, beyond which all is moss or ice, is little more than an immense forest, with some openings along the banks of rivers, where alone the scanty population can live; and here there are but 89 souls to the square mile in the government of Vologda. The forests in this division are the largest in the world, and indeed equal in size some European kingdoms. Timber forms the principal commodity in this industrial zone, but it yields the furs of animals, and fish. Barley is raised in a portion of it, the return being three times the seed; and in the southern part of Vologda, rye, hemp, hops, and flax are raised. In the mineral kingdom, granite and iron are found, and peat and salt are abundant. The Russian government has paid great attention to a system of canals, and here the canal named after the Duke Alexander of Wurtemberg connects the region of the northern Dwina with the Volga, and consequently with the interior of European Russia, as well as with the Baltic on one side, and the Caspian on the other.

The second industrial zone, forming the north-west of the Russian empire, is limited to the eastward by the Valdai mountains which look over Novogorod, Tver, and Smolensko, and by the chain of hills which run from those heights and stretch towards the south and north. In a southerly direction, this zone touches the territory on the Dnieper, and its southern frontier is formed by the government of Volhynia. It includes the provinces of Olonetz, St. Petersburg, Esthonia, Livonia, and Courland, and also Lithuania and White Russia. Throughout this area of 12,000 square miles there are immense forests, and of course timber is one of its chief products. Though agriculture is yet imperfectly practised in these districts, the yield of cereals is remunerating in good seasons, and exceeds the wants of the population. They produce more flax and hemp than any other provinces of Russia, and in some parts hops are raised. Horned cattle, horses, and sheep are numerous. Here also are found marble, iron, copper, and some gold and silver. Boat-building is a prosperous trade, and pitch is manufactured. Distilleries of brandy exist throughout all these provinces. This zone is the chief seat of the maritime commerce of Russia, containing St. Petersburg and Riga, the latter seated on the western Dwina, now joined by a canal to the Beresina, which is itself connected by another canal with the Dnieper, and thus the whole line is united to the Black Sea; but this canalisation is only adapted to the flotation of timber. But the most important communication by water is that which links together St. Petersburg with the mighty Volga, which runs a course of 3,000 miles, and by its means the principal part of the Baltic Sea is connected with the interior of Russia and the Caspian, on the system of canalisation commenced by Peter the Great, and perfected at a later date.

The central table-land of Russia in Europe forms what is called the Industrial Zone. It may be considered as a level plain, running from east to west, from the Valdai mountains to the Oural, bounded on the north by the southern frontier of the preceding zone, and on the south by an extension of the Valdai, which commences in the region of the Dnieper and the Desna, runs along the bank of this latter river across central Russia, and encompasses Koursk and Tamboff, from the town of Penza to the Volga, and then touches the higher shores of that river, at the point where it bends towards Samara. But in strictness, the districts situated to the north of these hills must be considered as belonging to the following zone. This zone includes the larger portion of Great Russia, the heart of the empire, where Muscovite manners and Muscovite nationality still preserve their ancient purity. Here the soil is tolerably favourable to agriculture, and ordinary cereals are cultivated. Rye is the chief product, and sufficient barley is not raised for the consumption of the inhabitants. In the western division of this zone, flax and hemp are abundant. Cattle are reared, but they are very inferior. Great care is taken of bees, because so much wax is used in the Russian churches. In the eastern portion of this zone, the gold and silver of the Oural Mountains are found, as well as marble, many kinds of precious stones and salt. In the neighbourhood of Moscow peat is valued as fuel. Here also are the principal factories in metals, cloth, tanning, candles, tallow, &c. Its trade with Europe is trifling, but it is considerable with Asia, extending to Bokhara and China. The roads are little more than the natural soil, hardened by frost; but the great water-way is the majestic Volga, and its numerous affluents and tributaries, most of which are respectable rivers. The trade to Central Asia is carried on by caravans, the point of departure being Orenburg.

The Agricultural Zone is limited to the north by the Industrial Zone, and to the south by the Zone of the Steppes, from which it is partly separated by a chain of low hills which commences near Ekaterinoslaff, on the Dnieper, and unites at the north of the Don with the Valdai Mountains. The richness of the soil gives it the appropriate and distinctive title of the Agricultural Zone. It consists of a thick bed of black loam, which covers the whole district, imparting to it a wondrous fertility. It spreads over 17,400 square miles, and the population is very nearly twenty millions. Here are raised wheat, hemp, oleaginous seeds, tobacco, hops, beet-root, and wax from bees. A part of the district, well wooded, yields pitch, tar, and pearl ashes. Nor is it wholly destitute of factories, as there are establishments for soap and candles, tallow, and tanning hides, saltpetre, and tobacco.

The Pastoral Zone, or Plain of the Steppes, lies between the frontiers, above mentioned, of the Agricultural Zone and of the southern boundaries of Russia in Europe, stretching from the Lower Pruth westward to the river Oural at the east, beyond which the Steppes are extended across Asia to the frontiers of China. The soil of the Steppes is variously denominated, according to its quality—grassy, heathy, brushwood, and sandy. This district is chiefly devoted to breeding horses, cattle, and sheep. It has this immense importance, that it contains the mouths of all the great rivers flowing towards the south. Odessa is its principal commercial port.

Northern Asiatic Russia, otherwise known as Siberia, may be considered as an immense colony of European Russia. It was discovered in the year 1577, during the reign of Ivan the Fourth, by Jermak Timofief, one of the hetmans or chiefs of the Cossacks of the Don. The name of Siberia usually awakens the gloomiest thoughts, and we are apt to picture to ourselves a country in which man, no longer the favourite but the outcast of nature, is ever exposed to the inclemency and fury of the elements; but in these generally accredited notions there is much exaggeration. It is true that in the northern districts of the country an iron soil does not permit vegetation to flourish, but the woods abound in game and the rivers swarm with fish. The reindeer, as one of the appointed servants of man, carries burdens and supplies milk. Hence it is that the means of subsistence are ample, though life has no charms in this dreary region. But the plains of Southern Siberia are wonderfully fertile, and the bowels of the earth are there rich in mines which yield gold and precious stones. Large deposits are found of elephant's teeth—a fossil ivory, the remains of a distant age, and of some great physical catastrophe. Here also the most beautiful furs are obtained, which create a large and lucrative commerce. Western Siberia includes the governments of Tobolsk and Tomsk, and the Asiatic portion of the government of Perm. Eastern Siberia comprehends the governments of Ienissaeisk and Irkousk. As an appendage to this vast colony may be added the possessions of the Russo-American Company, on the western shores of North America, which are productive as fisheries. Siberia contains 250,000 square miles, and rather more than 2½ millions of inhabitants; the area of the Russo-American provinces is computed at 17,500 square miles. The products of the country reach China by the route of Kiatka, and Russia in Europe through the fairs of Irbit and Nijni-Novogorod. This trade is greatly promoted by rivers and canals.

Nijni-Novogorod is remarkable for its fair, the most considerable in the world, and frequented by merchants from Thibet, Bucharia, Persia, by Greeks, English, and French. The town is built on a mountain, which looks down on the confluence of the rivers Volga and Oka. It is calculated that two hundred thousand strangers attend this fair, which is held yearly; but the resident population does not exceed twenty thousand. The fair is held on a level plain outside the city, and has the appearance of an immense bazaar, each merchant having his separate stall, and the whole being ranged in streets. It has been compared to an immense Asiatic camp, and each division is styled a city, as the city of tea, the city of iron, &c. Russia, according to the authority of Custine, receives from China 80,000 chests of tea annually, but this seems to be too low an estimate in 1855; one-half is sent through Siberia to Moscow, the other half is taken to Nijni. This tea brought partly by land caravans and partly by fresh water, is considered to be more delicate in flavour than tea transported by sea.

The city of rags supplies the manufacturers of paper; that of barked wood, the timber merchants. This material is furnished by Siberia. In the city of iron, that metal is displayed wrought into all varieties; it chiefly comes from the Oural Mountains. The city of wool draws its richest stores from Cashmere; what is called silk-cashmere is manufactured in Persia. The city of furs exhibits the skins of almost every animal, from the sable and squirrel, the blue fox and the bear, which are costly, down to the common fox and wolf, which are very cheap. The Caspian Sea furnishes dried and salted fish, for which there is a large demand in Russia, where four Lents are annually observed. The Bucharians, who live in a corner of Thibet bordering on China, bring precious stones to the fair, and it takes them eight months to come and go. The Kirguises and Calmucks bring wild horses from their steppes, and after being tamed they are excellent for the saddle.

The Transcaucasian provinces form that portion of the Russian territory which lies to the south of Russia in Europe. By virtue of an imperial ukase of the 26th of December, 1846, the whole of Transcaucasia was divided into four governments—Tiflis, Kutais, Schamaka, and Derbent. Russia now exercises dominion over the ancient principalities of Georgia, Imeretia, and Mingrelia, and holds the passes of the Caucasus. These she obtained from Persia by virtue of the treaty of Goolistan signed in 1814, and all Persian Daghestan, Sheerwan, Shekkee, Ganja, Karabaugh, and parts of Moghan and Talish. By the treaty of Turcomanchai, signed in 1828, Russia further pushed her authority into Persia, and fixed the boundary of the two empires at the river Arras, the ancient Araxes. Persia also surrendered the rich provinces of Erivan and Nukhchivan, and bound herself to keep no longer a single armed vessel on the Caspian Sea. These acquisitions have added enormously to the industrial resources of Russia, and before we specify the particular products of Transcaucasia it may be well to point out the accessions made to territory eastward since Peter the Great ascended the throne in 1689.

Her acquisitions from Turkey in Europe are of greater extent than the Prussian dominions, exclusive of the Rhenish provinces; from Turkey in Asia, they are nearly equal to the whole of the smaller states of Germany. She has taken from Persia an area equal in extent to England, while her acquisitions in Tartary have an area not inferior to that of Turkey in Europe, Greece, Italy, and Spain.

Transcaucasia covers 4,100 square miles, and the population is estimated at 3½ millions, being of mixed races, whose fusion, if it ever takes place, must be the work of time. The climate also is extremely various in different localities; in the valleys the vegetation is scarcely inferior to that of the tropics, while on the hills barley alone is grown and sheep pastured. In the eastern districts the soil is but of that character known as steppes. Oak and beech abound and are applied to shipbuilding, while silk, cotton, and the cochineal insect are powerful auxiliaries to commerce. The country also produces rice, wine, tobacco, wax, saffron, madder, and boxwood; in the animal kingdom, skins and furs; and in the mineral, several metals, as well as salt and naphtha. The geographical position of Transcaucasia gives it importance, it being on the line of commercial transit between Russia and Southern Asia, particularly Persia. This trade is powerfully assisted by the great military road through Georgia, leading to Tiflis, as well as by the ports of Redout Kalé and Poti on the Black Sea, and that of Baku on the Caspian. Tiflis is a busy and thriving city, and the seat of a growing commerce.

We now turn to the productive industry of Poland, or, to speak strictly, to that portion of the ancient kingdom of the Jagellons, incorporated with Russia. It has an area of 2,270 square geographical miles, and a population of 4½ millions. Its soil is admirably adapted to agriculture, and produces all the cereals suited to its climate. It is a large exporter of corn, of colza or rape, and of wool, of firewood, of timber for building purposes, iron, and zinc. Cattle are reared in great numbers, but few are sent out of the country. Prior to the revolution of 1830 there were some large cloth manufactories in Poland, and the article found a ready sale in Russia; since that unsuccessful effort to throw off the Muscovite yoke, Polish industry has languished, but it has some respectable establishments in silk and cotton fabrics, flax and hemp. Mining is prosecuted with advantage, and it has some salt works.

The area of Finland is estimated at about 5,300 geographical square miles, with a population of a million and a half. Before it was seized by Russia in 1808, it was considered the granary of Sweden. By its conquest Russia projected itself 160 miles, touching the frontier of Norway, and bending round it 190 miles, until it reached a line drawn due north from the Tornea. Finland, however, is not very fertile, although in favourable seasons it yields more corn than is required for the consumption of the inhabitants. Its forests furnish firewood and timber for building purposes, pitch, tar, and pearl ashes. These it exports largely, as well as hides, furs, and dried fish. It yields copper, zinc, and iron. In the last twenty-five years its trade has largely augmented, and is mainly carried on with Russia, Sweden, and Lubeck.

We have now taken a general survey of the different portions of this colossal empire under the aspects of climate and soil, and proceed to an enumeration of its leading products. Among articles of primary necessity, wheat is more important to the Russian labourer than to the labourers of Western Europe. In Great Russia bread is the principal food, and the Russian statists compute that the daily consumption is 3½ to 5 lbs. per head. Russia is supposed to raise three times as much wheat as France, while its population is not double that of France. However, on this important subject opinions are very conflicting. In 1836, the Russian Minister of the Interior estimated the total production of Russia at 223 millions of tschetverts—100 tschetverts are equal to 72·12 English imperial quarters. At the same date the internal demand for food and seed was calculated at 220,758,429 tschetverts. The annual exportation from the years 1824 to 1838, is put down on an average at two millions of tschetverts. There have been seasons when M. de Koeppen values the excess of production over consumption at so high a figure as ten millions of tschetverts. This no doubt includes Finland, Poland, and a part of Caucasia, which does not appear in the statistics of 1836. According to the tables prepared by M. de Reden, the provinces on the Baltic and the Siberian province of Ienisseisk yield the largest proportionate quantity, that is five or six times the seed; and it appears from the same tables that, taking the whole of Russia, the yield, on the average, is only three times the seed; but in some districts and in very favourable years it has been thirteenfold. In other parts of the empire, particularly in the industrial zone, the product of corn is inadequate to the wants of the inhabitants.

The Russian Privy Councillor Tengoborski, in a work entitled "Studies on the Productive Power of Russia," brought down to 1852, estimates the annual yield of the grain harvests of Great Russia, or Russia Proper, at 250 millions of tschetverts; and adding to that figure the produce of Poland and Finland, he makes the total 260 millions. He puts the exports of corn annually, on an estimate from 1838 to 1848, at 4,110,000 tschetverts, and considers that the average yield is four and a half times the amount of the seed. According to Tengoborski, the prices in various parts of the empire are extremely variable. Thus this writer states that in 1847 a tschetwert of rye was worth 11 roubles 7 kopecks in Courland, while it sold in the government of Orenburg for 1 rouble 16 kopecks; in 1849, the price at St. Petersburg was 6 roubles 49 kopecks, while at Koursk and at Penza it was only 1 rouble 80 kopecks—100 kopecks equal 1 rouble.

Haxthausen ascertained that while in the zone of "black soil," the tschetvert of wheat only cost 1 paper rouble, or about 10d., it rose to 2½ roubles in the industrial zone. According to Hagemeister, the tschetvert of wheat at Odessa, in the years 1816 and 1817, cost 45 roubles (paper), and in 1819 fell to 13 roubles (paper). In the very productive year 1843, the poud of flour was sold for 1 rouble, where it had sold in ordinary years for 4 roubles—the poud is equal to 36 lbs. English weight. In the scarce year of 1841, rye cost ten times as much as in 1843. In some parts of Russia the production of corn never suffices for the demands of the inhabitants; thus, the governments of Tobolsk and Tomsk always make up the deficiencies of the governments of Perm, Orenburg, and Irkousk. Bad seasons are also to be taken into account; on an average of the whole empire, the crop fails once in seven years. In special localities this happens more frequently; thus, in the government of Simbirsk, the records give three bad years in five. Owing to the precariousness of the seasons, and the difficulty of transport from the want of roads, the prices of corn and flour fluctuate very considerably in Russia, more so than in any other country. It was ascertained in 1837 that prices were four or five times higher at St. Petersburg than at Kieff or Tchernigoff, and nearly ten times lower in the government of Tomsk than in Livonia.

(To be continued.)

LAND DRAINAGE.

A record of facts is very much wanted, in order to establish the theory of land drainage on a solid foundation.

In offering a few remarks on the subject, it may be as well to observe in this place that we are only fulfilling a promise long past due to the agricultural press, lest any of our readers should think that we are joining issue in any controversy now existing relative to the "Keythorpe system," or any other system. The fact is, we lay it down, as a fundamental principle in land-drainage, that until a field is perfectly drained, no conclusion can be experimentally drawn as to what depth drains should be placed in it, or at what distance between; and therefore, that until the whole lands in Britain are thus drained, no general system can have the sanction of experiment. And even after a field has been perfectly drained by drains at a given depth and distance between, what right has any one to conclude that a less depth and greater distance would not have effected such a result, and hence have saved expense?

For the sake of brevity, perspicuity, and reference we shall enumerate the different examples quoted, as follows:—

Ex. 1. Soil, a vegetable mould, in some places approaching to peat earth, incumbent on old red sandstone, lying in a narrow valley, from which the water was imperfectly removed. A large open ditch was made through this valley, and lateral underground drains cut from 3 to 10 feet in depth, the former being the average. Field-stones being plentiful, the drains were filled with them to the depth of about 15 inches. With regard to the distance between, no given standard was observed, the maxim simply being to commence at one side, laying off another drain at such a distance from the one last cut as the porosity of the soil and subsoil pointed out to be necessary for drying the land. About ten acres had a thin seam of sandy gravel under the vegetable mould, about two and a-half feet from the surface. Two large drains, with one or two lateral branches to some springs, drained the whole of this on the Keythorpe system, a system then unknown by such a name. The land being comparatively level, the drains flowed full to the top of the stones after very heavy rains. Date, 1826: district, Strathmore.

In this example the facts deserving of special notice are these:—

1st. The stratum of sand under the soil acted as a natural drain in removing the spring water which rose in the bottom, and rain water which fell upon the surface, the artificial drain acting as a main drain, and the stratum, or natural one, as the parallel drains of the gridiron system; so that to have put in artificial parallel ones in this case would have been superfluous.

2nd. The capacity of the stratum of sand for conveying water to the drain was different at different places; but the least appeared capable of carrying off the bottom and surface water from 100 yards on each side the drain. The quantity of water, however, in either case being peculiar to this individual example, no general conclusion can be drawn as to what the capacity should be for a given distance between, in other examples.

3rd. The quantity of water discharged in a given time by the drain we never measured; but the example proves that on comparatively level lands a large quantity of stones is required to remove water—larger, we apprehend, than is generally calculated. But here, again, as much will depend upon the quality of the stones and the care with which they are put into the drains, so as not to intercept the water. No general conclusion can be drawn applicable to other examples.

4th. And with regard to the drainage quality of the soil above the sand, the example proves that such can be drained at little expense. Under this head the case is less exceptional, as it affords a parallel to many similar ones, almost all deep vegetable soils falling within it.

Ex. 2. Soil, a "spewing, sandy clay," incumbent on a finely-grained conglomerate, in extent about 14 acres, and situated on the same farm as the last example, but at a higher level. Between 1806 and 1810 the field was reclaimed from a quagmire by means of open ditches and drains, the latter, on an average, 3 feet in depth, and filled with stones. Fresh springs were frequently bursting forth between the drains, so that every summer called for a fresh supply. In 1827, and ten succeeding years, we had occasion to superintend the performance of this work. The springs rose sometimes within 2 feet of a drain, the water playing up and flowing on the surface until it reached the more open ground immediately above the drain, when it sank. In such cases the practice was to put in a new branch to the nearest old drain: and by attending to this the field was kept tolerably dry, except one corner of about 2 acres, from which no amount of drains would carry off the bottom water, for it always rose to the surface between them, however close to each other, keeping the whole ground wet and unfit for growing anything but rushes and the like. Suspecting a pressure of water in a sandy or gravelly bed at no great depth below the bottom of the drains, owing to the "dip" of the rock damming the water, we dug a hole in the bottom of an open ditch running alongside, and had only cut through a foot of rather compact clay when we came to a bed of fine sand, out of which flowed a volume of water 3 inches deep by 18 broad! The velocity was small, the bottom of the ditch being nearly level, still the discharge was large, and the effect produced accordingly, for a fine spring on the opposite side of a small plantation, at a rather higher level, as well as several drains, were rendered completely dry, while the land was greatly improved, although not altogether relieved from the injurious effects of bottom water.

In this example the facts deserving of special notice are these:—

1st. The springing of water close to the drains proves the drainage quality of such a soil extremely low, and that perfect drainage could not be effected on the gridiron or parallel system, it being impossible to remove either the bottom or surface water by such means only.

2nd. The sinking of the water immediately over the drain proves that in opening the drain and filling in the earth again over the stones the drainage quality of this portion of the soil was increased, so that with parallel drains sufficiently close and deep subsoiling perfect drainage might have been effected.

3rd. In 1826, although a year of extreme drought, only a few spots in the field were rent in fissures, the supply of bottom water being such as to prevent it. Indeed, in many places the ground was black and wet to the very surface every morning, with the exception of the narrow strip over the drains which remained dry, thus proving that the sun and atmosphere exercised but little influence in the drainage of such a soil.

4th. The great flow of water from the sandy bed below the bottom of the ditch proves that that part of the field was improperly drained, as the drains ought to have gone to the depth of this bed, so as to have removed the water from it.

From the "dip" or angle of the rock below, which rose to the surface when the water left the field, it is more than probable that cutting this rock for about half-a-mile to the depth of 8 or 10 feet would have removed the bottom water from the greater part of the field, leaving the question of surface drainage only to be solved. This, however, was a landlord's experiment beyond our reach. Had this been done and the bottom water removed, parallel drains and subsoiling with the action of the sun and atmosphere would have removed rain water, according to No. 2. In some places the rain might have percolated to the sandy stratum below, thus draining them on the Keythorpe system; but over the great area, both bottom draining and surface draining would have been necessary.

Ex. 3. Soil, a poor wet gravel, situated on a hill-side on the same farm, nearly in a line between Ex. 1 and 2. In this case the rain which fell upon the high ground burst forth along the declivity, forming here and there large patches of wet land, which could not be drained by taking drains right up the hill; but which were easily dried by running deep ones across, so as to intercept and cut off the water before it left the natural drains which brought it to the surface.

The facts we have to notice in this case are these:—

1st. The impervious body which intercepted the perpendicular descent of the rain water and which brought it to the surface, was rock covered by a clayey gravel. On this the open gravelly soil rested, so that the horizontal section of this gravel resting on the clay, formed the natural drain of the Keythorpe system. In some places it came to the surface nearly in a plane parallel to the horizon, and in others undulated, the undulations being very varied in size, so that the cross drains had to be regulated accordingly both as to depth and direction.

2nd. Where the clay came to the surface, was less tenacious and imbibed water, it was more difficult to drain, requiring cross drains at the top when it first cropped out, and parallel ones directly up the hill below this.

3rd. In a few places the rock was near the surface without a covering of clay—when the soil was dry and worthless as to value, "consuming everything and yielding nothing."

Ex. 4. The rain which fell upon a high heath-clad hill descended in heavy storms, drowning an arable field reclaimed from the lower part of it a close panny subsoil, preventing the water from sinking. In a hollow, immediately above the field, we opened a deep pit to the rock, filled it up half-full with stones, and drew a few furrows across the hill, which drained the water of a large area of hilly pasture into it, the water sinking into the open rocky bottom. We have several times seen a stream flowing into it sufficiently large to have driven an over-shot wheel of six-horse power.

The facts in this case require no special notice. We have met with several examples of a similar kind, both in hilly sheep pasture and low country arable lands, and doubtless many more could very profitably be made. The example was upon the same farm as the other three.

Ex. 5. Soil, a strong tenacious clay, incumbent on sandstone. In the valley referred to, in the first example, this clay rose to the surface in several places; and so tenacious was it, that it adhered to the share, mouldboard, and heel of the plough in such a manner as often to throw the implement out of the ground, necessitating its being scraped off clean before the team could again be started. At that time (1827) the gridiron system was not generally practised, although "three feet drains" were in several fields placed parallel to each other, and only from 4 to 6 yards asunder, in order to drain small areas of obstinate clays on this farm; but the work was considered too expensive to pay a tenant. Sand, peat earth, and old banks of gravelly vegetable mould being plentiful, the common practice was to apply large dressings of these, accompanied with quicklime, turning up the soil into deep narrow ridges, and having recourse to a summer fallow every fourth year, or every rotation. Two of the small areas in the example before us were newly reclaimed; and we have frequently seen the water standing in the foot-prints of the horses, and in hollows immediately over the drains, and also flowing in furrows right across them, without sinking, although the clay above the stones did not exceed twelve inches in depth. Where, however, the grassy sod of the first spit in opening the drain was inverted above the stones, and a plough furrow of the sward inverted above that, then a change of soil over the stones was effected, through which the water filtered freely. In like manner deep ploughing and mixing of the soil produced filtration, drying the ridges between the drains; but in some places where the top spit or sod had been carted off for applying to gravelly soils adjoining, it was otherwise, for there, as no vegetable matter existed for mixing, the work of drainage was less perfectly performed, the whole soil running into an impervious mass on the first heavy storm of rain. Summer fallowing, repeated ploughings, liming and manuring produced subduing effects, but slow in comparison to that from which the surface soil had not been removed prior to the land being reclaimed. The rending of the soil again into fissures by the sun was seldom effected, owing to the latitude of the place, and the bottom supply of water by capillary action, it being rarely too hard for ploughing at midsummer, unless in exceptional seasons. In this respect it was very different from similar soils in the south of England. Add to this the fact that the winters are early and autumn vegetation nil in the north, and the difference will be seen in a clearer light. With us, in Surrey, plants strike their roots frequently to the depth of such fissures in search of food, a result often effected in autumn when vegetation has all but ceased in the east of Strathmore. These roots dying produce a change in the character of the soil, securing a web-like stratification for the filtration of water to the drains; but where no fissures exist, as in the example before us, no rootlets can pierce the cold sour clay.

In this case the facts presenting themselves for special notice are these :—

1st. A tenacious clay soil through which water will not percolate perpendicularly one foot to drains, the force of adhesion being greater than that of gravitation.

2nd. A continual supply of bottom water counteracting the drying of the soil by the force of evaporation even at midsummer in ordinary years, owing to the latitude of the place, and the situation of the valley between two high hills.

3rd. The necessity of artificial means being used to make such soils drainable, first, by covering the stones or drains with the top spit or porous substance capable of allowing water to filter through it; and, second, of mixing the soil between the drains—converting it into a porous body, by deep ploughings, carting on of foreign materials, by liming, manuring, deep furrows, narrow ridges, and naked fallowing.

4th, and lastly. The little depth to which plants strike their roots into the subsoil, absence of fissures and consequent washing of the soil, with the negative effects thus produced on its drainage.

Ex. 6. A deep alluvial soil of vegetable mould, situated between the two clays of last example, in some parts with a layer of sandy gravel between it and the clay, in others, resting directly on the clay, while over the greatest area its depth was below the outlet or the bottom of the large open ditch. How much further we cannot tell, never having examined beyond thrusting our staff to the top, without finding any apparent change. In the two former the soil terminated abruptly at the bottom of the field, and in one place in the upper edge of a hollow in the middle of the field, in both cases rounding off to little more than a foot in thickness above the gravel and clay, where some of the finest springs of water we ever saw played in clear crystal fountains, from which it continued flowing the whole year, without intermission, never freezing during the depth of winter, or being affected in the smallest degree by the heat of summer. The hollow just noticed was composed of moss or peat bog, about 2 acres in extent, of great depth, and with its surface not more than 3 feet above the bottom of the ditch before drainage, and not more than 2 feet after it was drained and cropped several times.

The facts in this example are these :—

1st. The difference in the depth of the superincumbent soil, two places being capable of being drained on the Keythorpe system, but the greater area not, the natural drains of this system being below the artificial.

2nd. This area, however, was made sufficiently dry to do without open furrows by a few drains put into wet spots, no attention being paid to distance between them.

3rd. The deep soil of which it was composed was capable of swallowing the greatest rains that fell either during the summer or winter season at a distance of from 100 to 200 yards from the open ditch, varying from 3 to 14 feet in depth, or under-ground drains, 3 feet in depth; while it was otherwise with the shallower soil, averaging from 1 to 10 feet, the rains in this case flowing on the surface, rushes growing in abundance, and large springs of fine water bursting up and flowing in small meandering rivulets to the main ditch.

4th. The two large springs from 300 to 400 yards asunder obviously had their source in the bottom—most probably issuing from the rock, at no great distance up the field, on which the sand-bed lay, the rock being fed from a higher source, as field example 2nd, as dry weather and wet had little influence on the volumes of water flowing from them.

In corroboration of this we may mention that in field example 1 we traced the source of a similar spring to the rock, about 8 feet below the surface (speaking from memory). It was at the bottom of the same hill or steep inclination as the other two, and in a straight line with them, the three springs being about equidistant from each other. On coming to a ledge of the rock jutting up in the bottom of the drain, we perceived the water passing from under it. The "dip" of the rock was great, the joint or bed fine, evidently preventing the water a free egress. On finding this we asked the drainer, who was also a quarryman, if he thought he could drive in a wedge, and give the water better vent? "I'll try," was the prompt reply of the practical man, and without waiting for further orders he smote the crevice of the rock a few sharp strokes with his pick to make an opening for the wedge, when to his surprise no less than our satisfaction, the ledge broke, allowing the crevice to open nearly an inch, when forth flowed the water in a perpendicular stream, several inches high, thus proving the existence of fluid pressure from a higher head of water. The result was the perfect drainage of a large surrounding area previously kept wet along the crevices of this finely grained and bedded sandstone, and producing fine crops of rushes. In this case drains across the inclination of the field above this spring would have been of no avail in draining the surrounding ground on the Keythorpe system any more than would have parallel drains in the opposite direction, unless some of them had touched the rock, and that too at a point of it which would have given way to the tool of the quarryman. Returning to the two springs in question we find the facts otherwise; for there the water in both cases could have been intercepted, and the springs drained by deep cross-drains above their natural outlet.

Ex. 7. Soil, a tenacious alluvial clay, situated between examples 1 and 6, incumbent in some places on a thin bed of sand, in others on clay and moss, and from 1 to 2 feet in thickness. From the sand being full of water, the land above it was covered with a luxuriant crop of rushes, while some spots of that where the same stratum of clay rested on clay little but the coarse marsh grasses grew. The action of the roots of the rushes had changed the tenacious quality and yellow colour of the clay, where they grew, into that of a strong, spongy, and dark-coloured loam, capable of carrying horses and carts during the most rainy seasons of the year. A few drains removed the water on the Keythorpe principle. It was then ploughed from 8 to 10 inches deep, sown broadcast with oats, and well harrowed: this being done for two years in succession. The first crop scarcely returned seed, the second about double. Afterwards the field was fallowed, limed, manured, and subjected to a regular course of cropping, when, at the end of the first rotation, or seven years after being drained, it became one of the richest and most fertile loams in Strathmore, producing root crops and cerealia in equal abundance. That, however, on which the rushes grew was the best drained, the richest of the two in productiveness, and had required the least quantity of manure.

In this example we have the following facts to notice :—

1st. A change of the quality of the soil produced by the action of the roots of the rushes, and spring water below—the former descending to the water in search of food, filling the whole of the intermediate soil with vegetable matter, and the latter with the fertilizing substances which it holds in solution, such rising in decayed roots, feeding the rich grasses which grew along with the rushes, the spring water thus producing an effect analogous to aëration and manuring, the process, in point of fact, being bottom irrigation.

2nd. The drainage of the soil on the Keythorpe system, with the agency which the decayed roots of the rushes performed in allowing the rain water to percolate through the thin bed of clay to the sand, and the absorbent quality of this decayed vegetable matter to retain moisture during summer, and fertilizing matter at all times.

3rd. The difference in the quality of the soil where rushes did not grow, and additional expense it required in labour, lime, and manure, without producing equal results in harvest.

4th. The further change of soil produced by drainage, aëration, liming, and manuring—what was originally a strong yellow clay, producing nothing but marsh bent-grass (*Agrostis alba*) and rushes, being converted into a deep rich loam.

EAST AND WEST SUFFOLK AGRICULTURAL ASSOCIATION.

MEETING AT STOWMARKET.

The anniversary of the agricultural gathering of the county of Suffolk has been signalized this year by a most important and, we trust, beneficial event—the junction of the two Societies of East and West Suffolk. It had long been felt that the distinction kept up by the two Societies was injurious to both, by causing an assumed separation, without a diversity, of interests, which led, if not to jealousy of each other, at any rate to an unnatural competition which marred the prosperity of both. If "union is strength," disunion is accompanied with weakness, especially in cases where so many affinities exist to facilitate union, and render it serviceable. In the instance in point there needed but a clear understanding upon the subject, which, being arrived at between the two committees, the union was at once acceded to by both; and the meeting held on the 4th July, at Stowmarket, fully justifies the anticipations of the advocates of the amalgamation.

Our readers, therefore, may judge with what pleasure we visited the meeting of the Suffolk Agricultural Society at Stowmarket, on Friday, the 4th inst. The last year's Show was considered the best that ever was witnessed; but those who attended both that and the present, aver, that the latter far exceeded the former, both in respect to the number and quality of the stock, and the judicious selection of implements and machinery; nor ought we to omit to add, to the general arrangements, which for an open air exhibition, were of the most admirable order.

The ground on which the Exhibition was held, was the pasture-fields in front of a mansion formerly occupied by the d'Eye family, but which is now untenanted. The property was recently sold by auction, when it was purchased by J. G. Hart, Esq., of the Bank, Stowmarket, who liberally offered the use of the two fields, containing about twenty acres; the one nearest the mansion being appropriated to the machinery and small anmals, and the other to the horse and neat stock. The weather was every thing that could be wished, being beautifully fine, without being too hot. As the Show was confined to one day, the business to be transacted (between the hours of nine and three, the three last hours being all that was allowed to the public) was of no small consideration, as will at once be admitted when we state that there were 280 head of horse stock, 63 head of cattle, about 80 lots of sheep, and 36 lots of swine, on the ground.

To begin with the horses: it has long been the custom to represent Suffolk as a horse-breeding county, and such it is. Great pains have been taken to improve the stock of Suffolks, whether for heavy or light work; and never was the effect of such efforts better illustrated than on this occasion. Gentlemen on the ground, well versed in the mystery of horseflesh, one and all declared, that such an assemblage of excellence in that particular department was never before exhibited in this country. It might be added, that whilst a large proportion of the 280 horses and mares were first-rate, and some of them magnificent, animals, there was scarcely *one* that could be called an ordinary one. Never had judges on a similar occasion so arduous a task to choose between animals where qualities were so nicely balanced. For ourselves, we set out with the intention of making a selection for special notice, and beginning with No. 1, we found the red rose attached to his brow, jotting him down as A 1; but on proceeding we found so many that came up to him in real and even *prima facia* excellence, that we left off in despair. As we progressed through the field, we found the same near approximation of qualifications in the various classes of the animals, so near, indeed, as to require the most practised eye to detect a fault in symmetry, or in what constitutes strength, so as to throw it out of the category of prize animals. In fact we have no hesitation in saying that if left to our own judgment, we should have awarded the prizes, in many cases, under the greatest perplexity.

Mr. G. D. Badham was a large exhibitor, having no less than 15 head of horse stock on the ground. Captain Barlow, also, of Hasketon, had 12 head; and his entire thorough-bred chestnut horse ("Recovery") took the prize from "The Lion" of Mr. Walker, of Sutton, which gained the first prize three years in succession. "Recovery" certainly is a magnificent horse; full of life, and possessing bone and action that would make a Yorkshireman's heart beat again. Mr. N. G. Barthropp exhibited 9 horses, and gained two prizes; one for No. 11 (an entire chestnut colt), the other No. 4 (an entire chestnut horse—"Hercules"). The Messrs. Crisp were also considerable exhibitors.

The first five entire horses for agricultural purposes, in Class II., were all good, and nearly matched in excellence of qualities. We never saw horses better built for power. Amongst the three-year-old entire colts there were several of great promise; and we particularly noticed Nos. 14 and 17 as possessing superior merit. But the two-year-old chestnut colt ("Champion"), No. 22, was the most finished horse of his age we ever saw. We feel it however impossible to go through the classes in this way, as it would fill our paper. Suffice it to state, that Suffolk has fully maintained its celebrity in this particular stock, every fresh exhibition giving proof that the most strenuous and ceaseless efforts are made to attain that perfection which is as profitable to the breeder as it is important to the purchaser of horses.

In the different classes of neat cattle, Mr. Badham, Mr. T. Crisp (of Chillesford), and Mr. Barthropp carried off a large proportion of the prizes. The roan Durham bull (No. 409) of Mr. Crisp's is an extraordinary animal, having a hind-quarter nearly as deep as the fore. It gained the first prize; whilst another, of the same class (XIII.—No. 410), of the same owner, gained the second prize. Major Parker's roan bull (No. 414), under 2 years old, was a remarkably fine beast. The show of cows was less numerous than we expected; and although there were some milch stock of great excellence, we did not observe many of the Suffolk polled cows—those excellent milkers, which, on the banks of the Stour, produce so much good butter and bad cheese—According to Bloomfield—

> "Hence Suffolk dairymaids run mad for cream,
> And leave their cheese with nothing but its name—
> Its name derision and reproach pursue,
> And strangers tell of '*threetimes skimmed sky-blue!*'"

Of Suffolk cows there were only seven specimens, but of heifers eleven. Some of these latter were excellent cattle. The Durhams appeared to be the favourite stock with many of the Suffolk farmers. We noticed, also, two of the lady-like Alderney cows, with their quiet, gentle looks. Their horns, however, were tipped, which indicated more than we should otherwise have suspected in regard to temper. Mr. C. Jeaffreson's red Hereford cow ("Conntess," No. 444) was a fine specimen of that breed.

With the sheep and swine we had scarcely time left to form a critical judgment, so much were we occupied with the horses and neat cattle. The Messrs. Overman, of West Norfolk, were the largest contributors; and their Southdowns fully sustained the character so long possessed by their father and grandfather for that description of stock. The purity of the breed may be depended on as offered by these gentlemen, or, in fact, from any farmers of West Norfolk, where it has now been cherished for upwards of sixty years. We do not intend by these remarks to disparage the Down sheep of other exhibitors, for we saw none that were not creditable to the breeders. The Leicester tups we thought were rather too full of flesh for their work, and will be apt to be lazy. The Anglesea carried off both prizes for this breed of rams. There were a few excellent Cotswolds—a breed which is getting rather more into favour of late. We confess our "particular vanity," as Dickens has it, is the Southdown: the list of prizes will be found below.

Of the swine we can scarcely give any notice, being hurried out of the yard by the dinner-bell after the slightest view. From what we did see, however, the quality of those exhibited was first-rate, and some of them remarkable for their perfect symmetry. Mr. Crisp of Chillesford, Mr. Badham, and Mr. M. Biddell, were the largest contributors to this stock.

The increasing interest with which these agricultural gatherings are supported, is the best guarantee for the safety of the profession of husbandry. We trust that the union we have referred to above will add a fresh stimulus, and that every year will witness that progress towards perfection, of which the past has given promise; and that the unanimity, so essential to success, may be increased, rather than retarded, by the closer approach of friendly competition.

The show of implements was but scantily supported; though some of the articles exhibited merited special attention. This department of the meeting, in fact, was almost wholly represented by Suffolk makers; amongst whom we noticed the names of Messrs. Ransomes and Sims, and Turner and Co., of Ipswich; Garrett and Sons, of Leiston; Smyth and Son, of Peasenhall; Woods and Bewley, of Stowmarket; and Whitmee, of Wickham Market. The only maker from a distance, whose name we observed, was Mr. Sawney, of Beverley. Mr. Prentice, of Stowmarket, exhibited specimens of his cereal and turnip manures; also of his asphalte flooring, adapted both for barn and malting purposes. In our round amongst the agricultural implements the question suggested itself—to what cause may be attributed the East Suffolk Society not bearing full comparison with its neighbour of Norfolk, both as regards the high character and variety of implements we have there seen exhibited? To this question followed the thought that, considering the still increasing demand for mechanical appliances, no less in the field than in the homestead, the fullest consideration upon the subject on the part of the Council might not be out of place; and now that the East and West Suffolk societies have made common cause, the time has arrived when implement makers may be invited, at future meetings, to enter into competition, and that without disadvantage. Taken altogether, the East and West Suffolk show of live stock last week may well be called "first-rate." Viewing the meeting from another point, we see no reason why, in implement classes, equal praise should not be earned. In saying this, we trust that we are not attempting to impose either too great a weight upon the funds of the East and West Suffolk Society, or the labours of a now combined executive.

The Dinner.

The Dinner has long become an institution amongst us, and is as naturally looked for, after an agricultural or any other public anniversary, as the payment of a bill when due. It is the winding-up of an affair, at which the sentiments accumulated in its progress, are allowed to find vent for the public benefit. It is also the result of our social nature. Send an English farmer home, for instance, without his dinner, after attending the best cattle show ever collected, and he would certainly feel there was something essential wanting to give it due effect. The dinner, in fact, is considered a sort of crowning benediction, without which both exhibitors and visitors would return to their homes jaded and spiritless. Man is a gregarious animal; and if withheld from social intercourse, he rusts, from the overflowings of his own acidities, and degenerates into a misanthopist.

Some such ideas must have suggested themselves to the minds of the spirited managers of affairs at Stowmarket on Friday last, in *their* winding-up dinner. Assuredly, if any people know how to do a thing of the kind handsomely, it is the men of the Eastern counties. The entertainment at Stowmarket was laid out in the Corn Exchange, an admirable room for the purpose, which was given up by the merchants for the occasion. Without particularizing, we will just say that it was a gathering such as any nobleman might be proud to preside over. We found the Right Hon. the Earl of Stradbroke in the chair, supported right, left, and in front by Sir E. Gooch, Bart., M.P., Sir E. Kerrison, and the members of the committee of management—Messrs. P. Bennett, Bree, Bevan, Pettiwood, Chinery, Webb, &c., and the Revs. Hollingsworth, Coppinger Hall, White, &c., &c.

After the loyal toasts of the Queen and Royal family, &c., &c., Sir E. Kerrison proposed the health of the President of the Society, the Earl of Stradbroke, who in returning thanks congratulated the meeting on the proud position they found themselves in, on that day. By the union of the two sister societies they had doubled their strength and annihilated every obstacle arising from a disunion of interests, so allied by natural instincts. He himself felt, in presiding over the association, that he was only in the path of duty, and that his own interest as a landowner was bound up with that of the tenant-farmers, whose prosperity was of as much importance to him as his own. The noble lord took occasion to refer to the subject of agricultural statistics, which he considered would be of as much advantage to the farmer as to the merchants and public at large, by enabling him to ascertain when it would be advisable to sell or to hold his produce. At present every transaction in corn was effected in the dark, and the farmer more than any other was the loser. The noble earl was followed by various gentlemen, descanting upon the most interesting topics connected with agriculture; and the day closed with the utmost harmony and unanimity amongst the large number collected, of whom near four hundred were present.

JUDGES OF LIVE STOCK.

Agricultural Horses.—Mr. J. Ashwin, of Bretferton, Hall; Mr. C. Blomfield, of Hockwold, Wilton; Mr. J. Spurling, of Shotley.

Riding and Carriage Horses.—Sir H. Oxenden, of Lexden; Mr. G. Austin, of Grosvenor Street West; Mr. J. Mann, of Rockland.

Cattle, Sheep, and Swine.—Mr. J. H. Downs, of Richmond; Mr. H. Collins, of Duffryn; Mr. G. B. Ward, of Great Bentley.

LIST OF PRIZES.

AGRICULTURAL HORSES AND COLTS.

Best cart stallion, Mr. W. Stearn, of Elmsett; second best ditto, Mr, C. Cordy, of Trimley St. Mary.

Best 3-year-old cart stallion, Mr. N. G. Barthropp, of Cretingham; second best ditto, Mr. M. Crisp, of Letheringham.

Best two-year-old entire colt, Mr. J. Williams; second best ditto, Mr. W. Wilson, of Ashbocking.

Best one-year-old entire colt (Mr. R. Garrett's premium), Mr. S. Wolton, jun. of Kesgrave; second best ditto (Mr. R. Garrett's premium), Mr. J. Smith, of Hasketon.

Best mare with foal at foot, Mr. S. Wolton; second best ditto, Mr. C. Cordy, of Trimley St. Mary; third best (Sir E. C. Kerrison's prize of £2) not awarded.

Best foal, Mr. S. Wolton, of Newbourne; second best ditto, Mr. R. Harris, of Culpho.

Best gast mare, Mr. T. Capon's executors; second best ditto, Mr. S. Plowman, of Earl Stonham; third best ditto, Mr. N. G. Barthropp, of Cretingham.

Best three-year-old filly, Mr. S. Wrench, of Great Holland; second best ditto, Mr. J. Hare, of Shotley; third best gast mare (Sir E. C. Kerrison's prize), awarded to Mr. C. Frost, of Wherstead.

Best two-year-old filly, Mr. J. Ward, of Mersey; second best ditto, Mr. S. Plowman, of Earl Stonham; third best gast mare (Sir E. C. Kerrison's prize), awarded to Mr. S. Wolton, of Kesgrave.

Best one-year-old filly, Mr. S. W. Wrench, of Great Holland; second best ditto, Mr. J. Cockrell, of Wantisden.

HORSES AND COLTS FOR RIDING AND COACHING PURPOSES.

Best thorough-bred entire horse, Captain Barlow of Hasketon.

Best not thorough entire horse for coaching purposes, Mr. D. Gowing, of Mickfield.

Best cob mare covered this season (premium given by his Grace the Duke of Hamilton and Brandon), Mr. J. Chapman.

Best brood mare with foal at foot: mare, Mr. W. Boby, of Willesham; foal, Mr. T. Waller, of Sutton.

Best foal for riding purposes, Mr. H. Haward, of Bramford.

Best foal for coaching purposes, Mr. T. Waller, of Sutton.

Best foal by "Castor," or "Vanguard" (a silver cup, given by Captain Barlow), Mr. H. Haward, of Bramford.

Best three-year-old riding gelding or filly, Mr. N. Welton, of Bradfield.

Best three-year-old carriage gelding or filly, Mr. G. Sexton, of Wherstead.

Best two-year-old riding gelding or filly, Capt. Barlow, of Hasketon.

Best hackney mare or gelding under 7 years old, provided five are exhibited (a premium of £5 given by W. F. Hobbs, Esq.), Mr. G. Sexton, of Wherstead; second best, Mr. J. Hare, of Shotley.

CATTLE, SHEEP, AND SWINE.

Best Suffolk bull, under 2 years old, Mr. G. D. Badham, of Thurlestone by Ipswich.

Best bull of any other breed, not under 2 years old, Mr. T. Crisp, of Chillesford; second best, ditto.

Best bull of any other breed, under 2 years old, Major Parker, of Rattlesden.

Best Suffolk cow in-milk or in-calf, Mr. G. D. Badham.

Best three-year-old Suffolk heifer in-milk or in-calf, Mr. A. W. Crisp, of Chillesford; second best, ditto.

Best two-year-old Suffolk heifer in-milk or in-calf, Mr. A. W. Crisp; second best, Mr. G. D. Badham.

Best one-year-old Suffolk heifer, Mr. G. D. Badham; second best, ditto.

Best cow of any other breed, in-milk or in-calf, Mr. C. Jeaffreson, of Melton; second best, Major Parker, of Rattlesden.

Best three-year-old heifer in-milk or in-calf, of any other breed, Mr. N. G. Barthropp, of Cretingham.

Best two-year-old heifer in-milk or in-calf, of any other breed, Mr. N. G. Barthropp; second best, Mr. J. Wilson, of Onehouse Lodge.

Best one-year-old heifer of any other breed, Mr. N. G. Barthropp; second best, ditto.

Best pure Down tup of any age, Mr. H. Overman, of Weasenham; second-best ditto, Mr. G. Sexton, of Wherstead.

Best shearling Down tup, Mr. H. Overman; second best, ditto.

Best tup of any other pure breed, of any age, Mr. H. Aylmer, of West Dereham; second best, ditto.

Best shearling tup of any other pure breed, Mr. H. Aylmer; second best, ditto.

Best pen of 5 shearling pure Down ewes, Mr. J. B. Aylmer, of Fincham; second best ditto, Mr. H. Overman.

Best pen of 5 shearling ewes of any other pure breed, Mr. H. Aylmer; second best, ditto.

Prize offered by Messrs. Webber and Hedge, of Ipswich, for the best pen of 5 fat shearling wethers, to Mr. C. Boby, of Stutton.

Prize given from premiums returned, by Sir E. S. Gooch, Bart., M.P., in 1855, for the second best pen of 5 shearling wethers, to Mr. J. G. Hart, of Stowmarket.

Best boar, Mr. T. Crisp, of Chillesford; second best ditto, Mr. T. Crisp.

Best sow and pigs, the latter pigged since the 1st November, 1855, Mr. S. Wolton, jun., of Kesgrave.

Best breeding sow, Mr. T. Crisp; second best ditto, Mr. N. G. Barthropp.

Best pen of 3 young sows, pigged since 1st November, 1855, Mr. T. Crisp; second best ditto, Mr. M. Biddell, of Playford.

Best fat ox heifer, under four years old, bred by a member, Major Parker, of Rattlesden.

Prize offered by Lord Henniker for the best fat ox or heifer, not bred by a member, to Mr. J. G. Hart.

HIGHLY COMMENDED: Entire cart colt, Mr. S. Plowman; mare with foal at foot, Mr. G. Barthropp.

COMMENDED: Entire chesnut colt, Mr. J. Williams; chesnut foal, Mr. N. G. Barthropp; chesnut filly, Mr. J. Smith; chesnut filly, Mr. J. Cockrell; foal at foot, Mr. W. Boby; Down tup aged 2 years, Mr. G. Sexton; Down tup, aged 2 years, Mr. H. Overman; shearling Down tup, Mr. G. Sexton; 5 shearling Down ewes, Mr. G. Sexton; red and white Durham ox, Mr. J. G. Hart.

THE WOOL TRADE.

(Concluded from page 541, vol. xliv.*)*

We shall now, as a conclusion of our subject, take a glance at the progress of the woollen manufacturers during the present century. We have seen that the protection granted to the wool-growers in 1820, by the imposition of a duty of 6d. per lb. on imported foreign wool, coupled with a prohibition on the exportation of British wool, instead of helping either party, both brought down the price of native wool, and materially injured the manufacturer; first, by depriving him of the supply of fine wool absolutely required for the production of the best broad-cloths, and other superior goods; and, secondly, what was of equal, if not far more importance, exciting in the continental states a spirit of retaliation, to the exclusion of all British manufactured goods from their markets, and a far more sedulous attention to the improvement of their own native manufactures. The British woollen manufacturers never wholly recovered this false step, until the entire abolition of all restrictions on imports and exports in 1847; and it is more than probable that in some respects even this has not, and never can entirely, remove the effect; and that, great as the increase has been in the export of woollen goods since 1847, that increase has arisen from the demand in the United States, and our own colonies of Canada, Australia, India, and the Cape of Good Hope, to which we may add China and other far-away countries, to which the commerce of the kingdom extends, rather than from an increased demand in continental Europe.

An entirely new branch of manufacture has arisen from the introduction of alpaca wool from Peru. This wool is the produce of two domestic animals, forming a link between the camel and the sheep. These are the llama and the alpaca, which are used by the natives as beasts of burden, and are also valuable to them on account of their skins and flesh. In the interior of Peru there is scarcely a cottager who does not keep a dozen llamas and as many alpacas; using the first to convey his corn, potatoes, and fruit to market; whilst the wool of both serves to clothe his family, the flesh supplies them with food, and their beds are made of the skin. The quantity of this wool imported is by no means large; and that lustrous appearance it assumes when manufactured, renders it exceedingly valuable for making the more delicate articles of female attire, as well as for the covering of umbrellas, in which application of it it very successfully vies with silk. The quantity imported for the three years respectively, ending the 5th of January, 1854, was as follows:—

1852 .... lbs.	2,013,202
1853	2,068,594
1854	2,148,267

This wool is also valuable on account of the length of its staple, which is from six to eight inches, if taken off annually; but if allowed to grow more than two years it sometimes reaches twenty inches in length, without losing anything in strength, or acquiring coarseness. It is straight and free from the crispiness of sheep's wool; hence, when manufactured, the goods have a bright glossiness nearly equal to silk, and are soft and durable. We believe the greater part of the alpaca wool is manufactured at Bradford, in Yorkshire, where, in 1844, it was first made into dresses, from the produce of two alpacas belonging to the Queen, who desired to have it thus appropriated. The experiment was most successful; the dresses were highly approved by Her Majesty, and similar productions became fashionable. It is also used for the lining of gentlemen's coats instead of silk, which latter is now nearly superseded by it.

Great improvements have been introduced in the manufacture of woollen goods, both in regard to quality and execution. Foreign fashions are wearing out with us, and as our manufacturers have paid much greater attention to the arts and chemistry of late years, they are now able to vie with our neighbours the French, without servilely copying them. At the Great Exhibition of 1851, the influx of woollen textures from all countries gave the former an opportunity of selecting such patterns and fabrics as would be useful to them in forming new combinations, whilst the artist and designer acquired more enlarged and correct ideas of the union of lines and curves that constitute the beautiful.

Amongst the improvements in machinery brought forward the last few years, is a power-loom, in which two pieces of cloth can be woven at the same time, both being completed in the time formerly required to finish one. A "patent wool-combing machine" has also been brought out by G. E. Donisthorpe, Esq., of Leeds, which is likely to effect a complete change in the usual method of preparing wool for spinning, which it effects in a perfect manner at the expense of one farthing per pound, whilst it increases the value of the long parts of the wool 33 per cent. (or one-third), and whatever wool passes through this machine is equally improved in quality. It is also applicable to the preparation of flax. It combs from 150 to 500 lbs. of wool, according to quality, per day of ten hours, and does the work of one hundred persons, being attended only by one.

Another improvement in manufacture is the blending of sheep's wool with hemp, by which a useful as well as ornamental texture is fabricated. Whether this will prove a real improvement we cannot take upon ourselves to say; but it appears to us that it is impossible to impart a colour to two materials so opposite in their nature, that can be equally retained by both whilst the fabric lasts. We have seen a mixture of these materials, in which the warp is of one, and the woof of the other; and a very little wear was sufficient to produce a marked difference in the colour. It is possible that the more intimate blending of the fibre of the two may obviate this defect, and we shall be glad to find that it has done so.

Before closing our hasty sketch, we must just glance at the woollen manufactures of the sister-kingdom of Ireland. It is, however, with pain that we undertake to speak of the decline of the industrial pursuits of that country, brought about wholly by the pertinacious adherence to usages obsolete in the English manufacture, and to a scale of prices for work that totally precluded them from both the English and foreign markets.

The woollen manufacture in Ireland began to assume importance about the year 1665, when the impolitic measures adopted for the *protection* of the trade in England so greatly *injured* it, that many families from the woollen district passed the Channel, and settled in Dublin. Nearly at the same period sixty families came from Holland, and established themselves at Limerick; whilst others, both from France and England, went to Cork, Kinsale, and Waterford; and a London Company, with a capital of £100,000, fixed their establishment at Clonmel, in Tipperary, where they carried on the woollen manufacture to great advantage. All these different "plants" succeeded admirably, and gave extensive employment to the people. The number of sheep too—which, during the wars of Cromwell's time, had been greatly destroyed by the association of *Rapparees* (the Ribbonmen of that day) and other vindictive combinations—began greatly to increase. In 1672 Sir William Petty estimated the number of sheep at four millions, producing 8lbs. of wool each, or thirty-two million pounds. Of this, two millions were exported to foreign ports, and the remainder was consumed by the population, which was then estimated at *one million* one hundred thousand.

We have already referred to the various measures adopted by William the Third, and by subsequent as well as previous monarchs, to discourage the woollen manufactures of Ireland, and prevent the export of the raw material to the Continent. How far these efforts were successful may be gathered from the fact that in 1678 (before William's time) forty ships left the Irish coast to be landed (according to the cockets issued at the Custom House) in English ports, but of which *not one made its appearance in England*. Again: in 1697, before the passing of the prohibitory act of William, the export of woollen goods amounted to £23,614 9s. 6d. But *under* the operation of that act (which was continued by succeeding monarchs) the contraband trade amounted, in 1729, to £175,000, or about seven times the amount of the year's export before the act passed! The manufacture continued with fluctuating success until the year 1800, when the union of the two countries abolished all partial legislation, and left the manufacturers of Ireland upon the same footing, in every respect, with those of England.

At this time, all the manufacturers of Ireland were under the protection management of the Royal Dublin Society, which took upon itself to regulate the trade in regard to prices, profits, and modes of sale. This ceased in 1821, when the manufacturers were left to shift for themselves. Unfortunately, it was considered necessary for the *protection* of the body of manufacturers, both masters and operatives, that the same system of regulation should be continued, by a combination to prevent individual masters from acting in opposition to the rest; and also for fixing the prices of weaving, from which no deviation whatever was allowed. At this period, and subsequently, considerable reductions had taken place in the price of hand-loom weaving in England; but in Ireland, from the year 1825, when a small reduction took place, no further alteration in the prices was made for *five-and-twenty years*, or until the year 1850, when we found them *from forty to fifty per cent.* above those of England. But this was not all. The committee of the operatives, formed about the year 1822, soon got the complete ascendancy over their employers, who were compelled, under the terror of the combinators, to manage their business according to the arbitrary dictum of the committee. To employ one man or one loom, or to pay one penny per yard for weaving, more than they allowed, subjected them to a fine (which *must* be paid), stoppage, or destruction of the works, or, still worse, the corrective operation of "*carding*,"* or shooting!

Under such a system, it was impossible for the manufacturers to flourish, or even to carry on business at all. That branch of industry, in all its departments, sunk under it, and the manufacturers of Ireland (with the exception of the flax-manufacture in the North), exhibit at the present time the mere skeleton of what they once were. Between twenty and thirty thousand of the operatives of Dublin alone have emigrated to England, France, and America. In the silk trade, which a few years ago employed 6,000 hands, only 150 now remain, and the woollen manufacture is equally reduced. On every side of Dublin, cloth-mills formerly stood on the various mountain streams. All these, without, we believe, one exception, have either fallen in ruins, or been converted into flour-mills. The proprietors of the last of these failed a few years since, and the noble establishment, which employed some hundreds of hands, was at once shut up, and, we believe, has not since been opened. The writer was told by one of the parties concerned, that the failure arose wholly from the proprietors not being allowed by the combinators to manufacture such goods as the market required, or to pay such wages as would enable them to compete with the English manufacturer.

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* *Carding* consisted in laying the party naked with his face to the ground, where being held by four persons, his back was literally torn into strips by a carding machine. If the party knew his tormentors, his tongue was sometimes cut out, to prevent him from giving information.

This combination, which is essentially a *Labour Parliament*, is as active in Ireland, and as efficient for mischief, as ever, only with fewer materials to work upon. The writer has conversed with many of the operatives, as well as the masters, and neither appear to be at all sensible of the injury the manufactures have sustained from the system, but rather ascribe all their misfortunes to the want of capital to compete with the English houses. We have now before us two manuscript papers, given us by an operative, one describing the distresses of the body of weavers, and the other recapitulating the causes thereof, according to their views of the case. These are stated to be, the withdrawal of bounties on Irish, and protective duties upon foreign and English goods, and the impossibility of competing with either, with so small a capital as is employed in the Irish manufactures; but not one word is said of the combination or its destructive effects, both upon the masters and the operatives. These papers were drawn up about 1840, and were intended as a memorial to Parliament, upon which they call for a loan of sixty or seventy thousand pounds, a repeal of the Corn Laws, and a prohibition of the importation of all foreign goods into Ireland, with a committee to fix a legal rate of wages!

Of course, none of these absurd demands were complied with; and the operatives of Ireland have since been compelled to trust to their system of terror, which they have effectually exercised, to the *entire destruction* of many branches of industry, and the reduction of others to the mere shell of what they once were. Amongst these latter is the woollen manufacture, which is now confined to the coarser kinds of goods, the chief part of the fine wools of that country being exported to England and France. Considerable attention has been paid by many of the landowners of that country, to the improvement of the breed of sheep and the growth of fine wool, and the numbers of that animal have greatly increased. The high price of corn, however, the last two or three years, has induced some to part with their flocks, and break up their pasture lands, which will be felt in the reduction of the quantity of wool from the present time.

With regard to the British woollen manufacture, it never was in a more healthy or more flourishing condition than at present. The whole world is open to them, and, we trust, will continue so. The superiority of the British fabrics will always claim for them the preference in the foreign markets; whilst the abundance of capital and coal, with the perfection of their machinery, enables the manufacturers to compete with those of every other country.

FIRST-RATE OX GRAZING FIFTY YEARS BACK NOT EXCELLED NOW.

Sir,—I saw as clean, good, and as profitable grazing, and the oxen gained weekly as much weight per head, in the neighbourhood of Market Harborough, Leicestershire, fifty years back, upon first-rate old grass land, as I have ever seen since that time in any county in England. Many of the Leicestershire fields, or closes, embraced from fifty to a hundred acres each. Their pastures were kept short until the first of July. When I say short, I mean of sufficient length for an ox to fill his belly; and, to keep the said pastures level, sweet, and fresh, the ox dung was gathered up weekly. What said this first class of Leicestershire graziers, part of which was borrowed from Bakewell the great in agriculture? Why, that all grass grown before midsummer should either be mown or kept at a proper length by cattle and sheep, as grass (said they, wisely) grown in April and May is bad food for cattle and sheep in August, September, October, and November; but all grass grown upon rich land after midsummer is good and nutritious food for cattle and sheep all through the last-named four months. A meadow laid for hay and not mown, and not stocked until September and October, is bad and unfeeding: the first-grown grass being dead ripe, the seed is lost on the ground, and the dead grass is out of season. Eat all grasses in season.

About the same time, fifty years ago, I saw in Borough Fen, seven miles north of Peterborough, some clean and good grazing of a first-rate but quite a different system, by Mr. John Patrick. Here the closes were small, being enclosed by fen dykes instead of hedges, and were grazed principally with the best kind of polled Scots. At the latter end of June or the beginning of July, when Mr. Patrick had sent his first fat oxen to Smithfield, in each of his fields in succession he had all the patches of rough long grass mown and made into hay, and the oxen were taken out for a fortnight, so that all the rough grass that grew in the early part of the year was made into hay. This Borough Fen grazier kept his pastures young, fresh, and good feeding herbage.

About forty years back, I saw the same kind of good grazing as in Borough Fen by Mr. Copeland and his son; and I saw upon Mr. Copeland's first-rate marsh land long-horned Irish oxen, fed upon nothing but grass and hay, that averaged 40 guineas each, and they were sold in Smithfield by the celebrated salesman Mr. George Ireland. The above Irish oxen had some of the famous Bakewell long-horned blood in them, and the said Mr. Copeland fatted many of the best Lincoln short-horned oxen.

I saw a great deal of other good grazing near Boston. At one place I saw six cart-horses and two nag horses; the eight were kept in yards the principal part of the summer, upon rough grass cut from the fields daily, where fat oxen were grazing, which was done to keep the ox pastures a proper length for feeding. Can any farmer keep horses cheaper than upon hay and grass grown upon the richest parts of the close? Horses will eat after cattle, and cattle will eat rough grass in fields left by horses. It was said, about the year 1815, that Mr. Copeland, sen., had the best grass close in any lordship for thirteen miles round. This celebrated grazier, up to this time (1815), had fed his cattle upon grass and hay only; he had never used cake or corn, and was famous for changing the pastures of his best oxen.

The Leicestershire system of keeping pastures short until after midsummer does not answer in a very hot and dry season. The land never gets upon it sufficient grass to keep out the sun; but the mowing rough grass rejected by cattle suits all seasons, dry or wet. Samuel Arnesby.

No. 18, *Norfolk-street, Hyde-park, London, June* 25.

CULTURE OF RICE.

While we are paying attention to the products of our own soil, it is at the same time desirable to bestow a passing glance at the staples of other localities, especially when they enter largely into British commerce, and may be even more extensively and advantageously used than at present, both as food for man and beast. Of rice, which constitutes the food of fully one-third of the whole human race, we know little or nothing, either as respects its numberless varieties or the particular systems of culture—whether in respect to the simple mode of sowing on the alluvial flats of the Indian rivers, or the more perfect artificial irrigation pursued by the Dutch in the East, which results in the fine-grained Java rice of our markets.

Of the various cultivated crops of the East, rice is certainly that of the first importance to the native population; it is, indeed, the bread-corn, *par excellence*, of most parts of Asia; and its consumption being universal and liberal, the production is necessarily immense. It is impossible to obtain any correct data respecting a crop so variable and fluctuating, and extending over so wide an extent of territory, particularly when no account whatever of the yield is kept. Taking merely the East India Company's territories, we may obtain, however, by a very rough estimate, an approximate idea of the produce, local consumption, and quantity shipped.

Captain Low, a former governor of the Straits Settlements, states that a common labouring Malay requires monthly 56lbs. of rice; and other statists agree pretty closely in this calculation. Now, taking only 75,000,000 of souls, or one-half the population of India, as rice consumers, at this ratio the consumption would amount to 22,500,000 tons per annum, besides the large foreign shipments and the quantity saved for seed. With the undetermined populations of the various Eastern kingdoms, including China, and the numerous islands of the Archipelago—all be it observed, depending on rice as the main staple of food—it would be impossible to form any reliable estimate. At even 3 cwt. each per annum, the Chinese population would consume 54,000,000 tons of rice. At least half an acre is supposed to be devoted to the culture of rice in China for every head of its 360,000,000 of population; and two crops of rice, besides other grain, are frequently raised there in the year. The culture of rice in Java is largely attended to by the Dutch, and considerable quantities are exported both to the contiguous islands of the Eastern Archipelago and to Europe. 5 to 6 cwt. of cleaned rice per acre is often obtained there on well-watered lands.

The Province of Arracan, in the Bay of Bengal, has become the granary of most of the British eastern possessions, and especially of late years has it increased in importance as a port of shipment. Akyab, the rice garden of the East, yielded in the season of 1855 upwards of 181,000 tons of rice, and the Bassein district more than 150,000 tons; making together upwards of 330,000 tons of food from one district in the Arracan Province. The value of the rice and paddy exported from Rangoon in the first six months of 1855 amounted to £35,000; and as population increases there, by settlement and immigration, so will cultivation and production extend.

In the last five years the produce of rice in the Akyab district has nearly quadrupled. The shipments, which in 1849-50 were only about 70,000 tons, had reached in the year ending June, last year, 210,571 tons. The rice is bought and sold by a local measure, termed a "basket," of 12 seers; 85 baskets go to the ton. The monthly shipments now range from 2,500,000 to 3,500,000 of these baskets, according to the season of the year. It is brought down to market daily in small lots by the country trader, from whom the export merchant buys and stores the rice in his godowns or warehouses; and thus from 10,000 to 80,000 baskets per day are brought to market, according to the supply. In the month of February supplies of rice begin to come forward rather freely, reaching the largest amounts in March, April, May, and June. The commercial descriptions of rice are three—cargo rice, white rice, and paddy; but every locality gives its name to the produce shipped therefrom; so that we have numberless varieties in the market, with but very little distinctive character.

In the month of February, this year, thirty vessels, registering about 20,000 tons, and conveying nearly 2,000,000 baskets of rice, cleared from Akyab. Of these eighteen were bound for ports in Great Britain, nine for Europe, and three for Indian ports. Vessels of 1,500 tons bound for British ports will carry 160,000 baskets; but usually the vessels loading are from 400 to 800 tons, carrying 40,000 to 90,000 baskets of rice. The breadth of rice cultivation having been so much extended, the number of vessels resorting to Akyab for the purchase of its staple produce, and for transporting it to the Straits settlements, to China, Mauritius, Australia, and various ports of Europe, may be counted by hundreds within the year. Mauritius, Ceylon, and Bourbon take large quantities of rice. The consumption in Mauritius is about 60,000 bags per month, the Coolie labourers from India being large consumers. The same may be said of Ceylon, where the imports last year were 2,852,179 bushels of rice, valued at about £500,000; and 884,358 bushels of paddy, or unhusked rice, of the value of £65,327; besides about £17,000 worth of curry stuffs, the essential condiment for the rice. The other grain imports to that island (little or none being locally raised for food, so much attention being devoted to coffee) were 95,471 bushels of gram, consisting of various kinds of pulse (the chick pea, &c.), valued at £19,000, and about £12,000 worth of wheat, making therefore a total import of food, in value amounting to nearly £614,000.

The export of rice from the port of Calcutta has also largely increased in the official year ending May, 1856, as compared with the preceding year; the increase having been fully 150 per cent., namely, from 1,107,800 maunds to 2,788,530 maunds; and this increase, at 6s. per maund (of say 74½lbs.), gives a money value of £504,370. In the existing circumstances of India every increase of demand is a direct addition to the wealth of the district which feeds it. It is not there as here, where an increased demand for food means increased suffering to the consuming classes. An extra half million of maunds of rice for export signifies to the natives on the banks of the Hooghly the redemption of a hundred thousand acres from the jungle. It may for the moment increase prices, but, if continued, it simply extends the area of cultivation.

The annual imports of rice into the United Kingdom in the past three years have been as follows:—

	Rice.	Paddy.
1853	1,504,629 cwts.	19,477 qrs.
1854	1,342,743 ,,	18,956 ,,
1855	2,238,213 ,,	18,673 ,,

The importation of unhusked rice has altered very little, keeping pretty steady at 18,000 to 19,000 qrs. Cleaned rice it will be seen has, however, largely increased, the excess of imports in 1855 being 895,465 cwts. While the production of rice in India is so largely on the increase, but little progress seems to be made in its culture in the United States, although more pains is certainly taken there in the culture and in the preparation of the grain for market.

Extensively as rice is at present cultivated in the East; as population increases, and the circumstances of the natives improve by the extension of Commerce, so are cultivation and production increasing, and the means of the Indian ryots and labourers are rapidly improving by greater employment and better wages. As yet, very little has been done in the British colonies to extend the culture of rice, and yet there are many localities where it might be made a very remunerative crop. In British Guiana, Honduras, and other settlements which have facilities for irrigation, or marsh lands, very prolific crops of rice could be obtained. Indeed, we recently inspected some very fine samples of rice grown in British Honduras, which were pronounced in the quality of the grain to be nearly equal to the best Java. The difficulty appears to be in obtaining machinery to clean or prepare it on the spot, so as to lessen the cost of shipment. At present the husking and preparing of paddy is a monopoly in one or two hands in London. These firms have extensive machinery for the purpose, and being the only purchasers can to a great extent make their own price for the article on arrival.

There is no doubt that it behoves us to pay more attention to the extension of the culture of all tropical grains and roots, which might come in as adjuncts to our home production of food, particularly when we consider the droughts and famines that occasionally prevail in parts of India, which, by raising prices and increasing local demand, stop the supplies for export.

Rice is now largely used by our manufacturers for starch, by some agriculturists for feeding stock, and by our population as an esteemed article of food—indeed, it has always been much more popular than maize. When we watch the immense increase in our own ports of rice, now largely in excess of even those of the famine year, and consider that on the Continent its consumption is also spreading very rapidly, we must admit that more attention is demanded to the statistics of production and consumption of this and other articles of food, both on the part of farmers, factors, and merchants generally; for it should be remembered that unfavourable harvests may come upon us at any time; and it is well to know what quantities we could obtain, and where we could procure them the most promptly, and of a kind that would suit the tastes of the consuming classes.

ORDNANCE SURVEY OF SCOTLAND.

We are not among the number of those who consider that the Scottish grievances are wholly imaginary, or confined to such matters as the position which the Scottish lion shall bear on the quarterings of the royal shield in Scotland; though, if that was one of the articles of union, we see no reason why it should be violated. What Scotland asks is a subordinate local legislation for local questions—such as railway, harbour, and turnpike bills. There can be no doubt that the Imperial Parliament is overwhelmed with such business, the details of which could be best discussed on the spot, and with less expense, both in England, Scotland, and Ireland, and prepared for the fiat of the Imperial Parliament. Be this, however, as it may, the Scots have no reason to complain of the delay which has taken place in the extension of the Ordnance Survey to Scotland, which is one of the grievances. There has been a progressive improvement in these surveys. That of Ireland is superior to that of England, and the survey of Scotland will be superior to both. This is apparent from the report of the Committee of the House of Commons on the Ordnance Survey of Scotland, which has just been published.

That report commences with a history of these Ordnance Surveys of the three parts of the United Kingdom, from which the following is deduced.

The survey of England was commenced in 1784, and was merely intended as a military map of the southern counties. As the work advanced, it came into general favour, as a road map, a travelling map, and a general geographical map. Such it continued till 1824, when Lord Mounteagle and the Irish members came to the conclusion that in extending the survey to Ireland, it would be desirable to secure some further social advantages, by making it subservient to the purposes of assessment for the county cess, and other local taxation. In consequence of this, the Irish survey was made to show the boundaries of townlands, which, in Ireland, are the unit of local taxation; and, in most cases, their boundaries are also the boundaries of estates. When the Irish survey had made considerable progress, the Government were further induced to extend the survey from the boundaries of townlands to those of fields.

In 1840, all England, with the exception of the six northern counties, had been surveyed, engraved, and published, on the scale of one inch to the mile. These northern counties were found so densely peopled that it became impossible to show the necessary details on so small a scale, even so that they could be read with a powerful magnifying glass. In consequence of this, the Government, acting on the representation of the principal scientific bodies, and the recommendation of the late Duke of Wellington, and considering that if the country incurred the expense of a survey it should be one that would be generally useful, consented that the northern counties and the whole of Scotland should be mapped on the scale of six inches to the mile; several counties having been surveyed and mapped on the one-inch scale. On the completion of the Irish survey, that of Scotland was resumed on the six-inch scale, which had been found so useful in Ireland. The work already done on the scale of one inch to the mile was consequently thrown away; and the distinction between the peculiar advantages of a six-inch scale, as applicable to Ireland and its inapplicability to the larger territorial divisions of Great Britain, was not at that time sufficiently attended to.

In 1849, the subject of the Ordnance Survey of Scotland was again brought before the Select Committee on Army and Ordnance Expenditure, but the only recommendation they made was that the survey of towns should precede that of the rural districts.

In 1851, Lord Elcho's Committee on the Scottish Survey was appointed, and the state of the case then was this—a six-inch map had been resolved on, but on one-inch map; and the question before the Committee was simply this, whether they would have the one or the other; and the one-inch scale being the best adapted to geographical purposes it received the preference.

In consequence, therefore, of the report of that Committee, the English and Scottish counties already in progress on the six-inch scale were ordered to be completed, and the rest of the country to be mapped on the scale of one inch to the mile.

This decision produced the greatest dissatisfaction in Scotland and the north of England; and, in 1853, in consequence of numerous representations from the Commissioners of Supply, the Royal Convention of Burghs, and various other bodies in Scotland, and from magistrates and others connected with the mining and colliery districts in England, in order to induce the Government to rescind the order which they had made and to return to the six-inch scale, they decided that the county of Fife then in progress should be on the six-inch scale, and the question respecting the rest of the country reserved for future consideration. Meanwhile the desirableness of a six-inch scale was discussed by professional persons, and a more matured opinion obtained.

In 1853, a memorial was drawn up by Lord Elcho, then a Lord of the Treasury, with a circular letter on the subject, which was transmitted to a number of the most experienced and scientific persons in the kingdom, requesting them to state their opinions on the comparative merits of the six-inch scale, as compared with a larger scale, it being understood that the one-inch scale would, under any circumstances, be proceeded with. The replies were 32 in favour of a six-inch scale, and 120 in favour of a larger scale.

These replies being decidedly in favour of a larger scale, further queries were addressed to the same parties, requesting them to state what scale they would suggest.

In 1854, the replies to these inquiries were submitted to a Committee, consisting of Sir John Burgoyne, Mr. Blamire, and Mr. Rendel, who replied that the weigh, of evidence before them was decidedly in favour of the scale of 1-2000,500th part of the linear measure, termed in popular language the 25 inch scale, or one square inch to one acre. Under these circumstances, the Treasury determined by a minute, dated July, 1854, that the survey of Ayrshire and Dumfriesshire should be laid down on paper on the above scale, and that until a decision should be arrived at the survey of the rest of Scotland should be on the same scale as those two counties.

On the 18th of May, 1855, a Treasury minute was passed, on the recommendation of Colonel James, R.E., the able superintendent of the survey, in relation to the engraving of the Ordnance sheets of Scotland, which required immediate decision.

1. That it is unnecessary to have plans of the Highlands and uncultivated districts on the 1-2000,500th scale, and that the superintendent of the survey should exercise his discretion as to the districts, the plans of which are to be made on that scale.

2. The plans on the 1-2000,500th scale should not be engraved, but that copies, when wanted, should be made by the anastatic process.

3. That the Highlands and other partially cultivated and thinly peopled districts should be drawn on the scale of six inches to a mile, and that copies, when wanted, should be furnished by the anastatic process.

4. That the general map of Scotland on the scale of one inch to the mile should be proceeded with as rapidly as possible.

5. That the plans of towns containing more than 4,000 inhabitants should be drawn on the scale of 1-500th of the linear measure.

In August, 1855, Lord Panmure, who sat ont he Committee of 1851 as Mr. Fox Maule, addressed a letter to the Treasury, in which he stated his opinion that, however necessary it may be to delineate on the 25-inch scale (1-2000,500th of the linear measure), such enlarged map should not supersede the production of a map from the same survey on the scale of six inches to the mile, uniformly with those parts of the country which are laid down on the last-mentioned scale only.

This brings down the history of the Ordnance surveys of the United Kingdom to the appointment of the Committee, whose report is before us.

We are no advocates for absolute monarchy—we are no friends of the system of centralization which pervades everything in France; and yet it must be confessed that in some matters it has its advantages as compared with Saxon institutions. Take for example our railways, and our Ordnance and Tithe surveys. As regards our railways, what sums have been lavished on engineers and lawyers, and parliamentary agents, to say nothing of the land which has been wasted, by being cut up for useless railways, and that is no trifling consideration in a small and densely-peopled country like this, which is unable to supply its inhabitants with food from its own soil! How many competing lines we have, where one, with a few feeding branches, would have sufficed for all the traffic! How low the per-centage they yield for the capital expended on them! In France the Government selected the lines, leaving the execution of them to the companies; and there the original shareholders have doubled and tripled their capital. Where are the shareholders in English railways who can say the same?

Other instances of the money we waste from want of system might be drawn from our palaces and public buildings, on which we have lavished sums untold, and yet have scarcely anything worthy the name of either. We will confine ourselves, however, to questions more intimately connected with landed property and agriculture—the Ordnance and Tithe surveys.

There is the Ordnance survey. We have been working at it for half a century, at an expense of millions; and when we have completed the surveys of England and Ireland, and are entering on the survey of Scotland, we have, at length, adopted the system with which they commenced in France, when we began the patch-work of our surveys. The advantages of the French survey, and the defects of our own, are adverted to by the committee on the Scottish survey, in their report, and were explained to them by Colonel Dawson, the Assistant Tithe and Inclosure Commissioner, and Colonel James, the present Superintendent of the Ordnance Survey. The idea of the French cadastral survey, on the scale of 1-2500ths of the linear measure, popularly called in this country that of 25 inches to the mile, originated with those eminent mathematicians Laplace, Legrange, and Delambre, in 1793. A commission, of which they were members, recommended it to Napoleon, in 1807, who adopted it; and carried it out with signal success in France on that scale. Perhaps in those antigallican days that was sufficient reason with us for rejecting it.

The idea of applying it to England originated, as the committee observe in their report, with Colonel Dawson, when the Tithe Commutation Act was passed in 1827; and from his experience, as Assistant Tithe and Inclosure Commissioner, he stated before the committee, that had the suggestion been adopted it would have saved an expenditure of £3,529,830 in the commutation of the tithes, besides a further considerable outlay in respect to roads, canals, water supply, and the sale and transfer of landed property, which there are no means of estimating. It appears also from the evidence of that eminent civil engineer, Mr. Vignoles, who has been extensively employed on railways in Bavaria, where they have a cadastral survey on the principle of that of France, that all transfers of land are there made by cadastral maps on the 25-inch scale, and that he does not believe it would be difficult to apply the same system to England. It would be necessary to register property transferred in this manner when it was sub-divided and sold in separate lots. He stated also that, as a civil engineer, he had derived the greatest advantage from maps similar to those proposed to be made by the Ordnance survey of Scotland. The Lord Advocate of Scotland stated further with respect to the facilities which such a survey would afford for registering titles, and dispensing with long descriptions in title-deeds, by referring to a copy of the map attached to the document, that it would tend materially to the desirable object of abridging the expenses of such transfers. With respect to the expense of this survey, the committee further report, that having minutely examined the estimate of Colonel James, they have found that after a year's experience it has been fully confirmed in practice, and that a sum of £917,000, of which £284,000 has already been expended, will cover the entire cost of the 25-inch survey of Scotland, including the publication of maps on the reduced 6-inch scale. If the survey were confined to that scale alone it would require £817,000, and for the 1-inch map £250,000, including in each case the cost of publication. It appears, therefore, that for an expenditure of the extra £607,000 the people of Scotland will obtain not only a geographical map, but a map on the largest scale, the best adapted to all purposes affecting the land.

The expenditure for the construction of such maps may, likewise, be regarded merely as an advance of money for a commercial speculation too great to be undertaken by individuals, and which, from its public nature, ought to have the stamp of authority, and not to be treated as a mere commercial undertaking, though it will eventually repay its cost. It appears in evidence that £76,000 has already been paid into the Treasury for the sale of Ordnance maps, and that the Treasury are now realising £4,000 a-year from that source—that one year more will pay off the cost of engraving Ireland, and that a few years more will repay the cost of engraving Scotland. It appears also from the evidence of Colonel Dawson that for the tracings and inspection of the maps of the Tithe Survey, inferior and almost useless for such purposes as the second class maps are, which form two-thirds of the whole, there was paid by the public during five years, from 1850 to 1855, the sum of £16,058.

As regards the expense of furnishing copies of the 25-inch maps to those who may require them, Colone

James stated that the sale of 33 copies would repay the cost of production by the anastatic process, and that if his suggestions should be followed up, the entire cost of production would be repaid in a few years.

In Ireland a 6-inch map and a 1-inch map have been obtained at an expense of £1,293,014. In England and Wales a 1-inch map has been obtained at an expense, excluding the six northern counties, of £989,219. England and Wales together are estimated to contain about 60,000 square miles, Scotland and Ireland about 30,000 each. The survey of Scotland, conducted in the manner proposed by Colonel James can, therefore, be effected for £30,000 less than that of Ireland cost.

An opinion was expressed before the committee by Sir John Burgoyne, Mr. Stevenson, Sir C. Trevelyan, Colonel James, and Mr. Sopwith, the eminent mining engineer, that a survey of this kind is not to be looked at merely in a financial point of view. Whatever the first outlay may be, it will be found, as has been found in France, that it is more economical to produce in the first instance a large cadastral map, from which other maps can be reduced at a trifling expense, than to resurvey the ground as has been done both in England and Ireland, in consequence of the insufficiency of the first survey. All who are conversant with surveys know that it is easy to reduce a large map to a smaller scale; but impossible to make an accurate large map from a smaller one.

In deciding in favour of a cadastral survey on the scale of 1-2500ths of the lineal measure (popularly the scale of 25 inches to the mile,) the committee declare themselves to be influenced by the advantages which may be anticipated from it, and what have been found so beneficial in France, Bavaria, Switzerland, and other countries which followed the French example. The objects of such a survey, and the various purposes to which the committee pointed out its applicability, were discussed in a former article.

We may add that Sir C. Trevelyan, Colonel Dawson, and Colonel James, appear from their evidence to contemplate the resurvey of England and Ireland on the large scale when that of Scotland shall be finished. As that, however, will not be for less than five years, and as the resurvey of England will occupy many years, few of the present generation will enjoy the benefits of such large maps, applicable to many valuable purposes, all of which might have been secured if the representation of Colonel Dawson, in 1827, sanctioned by the Government, had not he been overruled by the landed influence in the House of Commons—or rather the influence of the advisers of the landed interest—in which originated the second class tithe maps, which are useless for the valuable public purposes which have been enumerated. If any of our readers ask what is meant by a cadastral map, the reply is, a map of public record. The first class tithe maps are cadastral, the second class maps are not.

PROGRESS OF AGRICULTURAL CHEMISTRY.

We sometimes complain, "how little has chemical science really done for agriculture!" It is true that the means we now possess of analyzing manures is of great service to the farmer, in saving him from the many rogueries of adulteration; and the analyses of soils and of crops have taught many valuable lessons in practical husbandry. Still, agricultural chemistry has not effected such great changes in farm practice as might have been expected from the improvements introduced by chemistry into other arts; and hence every lecture and essay on the subject invariably concludes with a confident expectation that great things *will* result from investigations which are yet infantile and—promising.

Now, though we do not obtain a very startling view of the advanced state of agricultural chemistry from positive evidence, we may see how great has been its progress when we examine negative testimony on the subject. Thus, for instance, let us look back to what was formerly taught concerning that fundamental question, "What is the food of plants?" Not that we need dive into the old treatises of English and foreign philosophers, but merely refer to the teachings which used to appear in agricultural periodicals, and excited inquiry among the farming magnates of a former day.

The Rothamsted experiments have lately put us in possession of many facts, enabling us to deduce principles which may be of great service in helping us to future discoveries. Going back for eighty years, and considering Arthur Young as the pioneer of his day, let us see what investigations can be compared to these.

In the years 1783-4-5, Young conducted a series of experiments; growing plants in pots in different sorts of soil, and manuring with various substances. One of his conclusions showed that common salt is a valuable manure; though no trials worthy of dependence had established this truth before. And his notes on the experiments (as published in the *Annals of Agriculture*) are interesting. The principal feature of one set of trials was "the salt acting as a very good manure upon loam, but doing no good whatever upon sand, which is remarkable, and should make one conjecture that its operation is mechanical,—salt rendering the loam much more fertile, and taking a considerable effect mixed with dung." The result of another set "is very remarkable, and highly in favour of salt when dissolved in water and added to dung. Though poultry-dung alone has been unable to stand the late burning weather, yet the addition of salt to it has made it prove a fine manure to the present moment. This suggests a most important lesson for the addition of salt to dung-hills." Spirits of hartshorn and sal ammonia were employed in many experiments; and his observations are—"The volatile alkali continues in this, as in every trial, to triumph;" "the volatile alkali has never failed being of great service;" "in every repetition we can make upon the volatile alkali, its superiority to all other additions is more and more confirmed." Up to that time, however, ammonia had been declared an enemy to vegetation; as, for instance, in Home's *Principles of Agriculture*, in which it was contended that the food of plants resided in acids. Young found that "in four years the effect of the spirit of hartshorn is worn out:" in another case, "in two years and a-half this most volatile substance has retained its effect, adding a fresh proof to the great excellence of this alkali as a manure.". The experiments were tried principally with barley, the grain and straw being weighed when ripe.

He tried several experiments as to the effect of the sun's rays upon soil: his conclusion being, "The result is striking and decisive, and seems to prove too clearly to admit a doubt, that covering the soil from the sun is beneficial to it. If this be the effect of the sun, where is the good of summer-fallowing?" Of another trial he says, "The superiority of the earth kept from the sun has been regular throughout this trial;" "the results seem to denote that an advantage will generally be found to arise from excluding soils from sunshine as much as is consistent with the destruction of weeds." Do not our modern German chemists talk of the "destructive influence of the plough," in exposing humus and ammonia to the rapid evaporation of the sun's heat? and do not the teachings of our own men of "science with practice" point to the value of overshadowing leaves in the hot summer, to protect the gaseous riches which have been stored in the soil in the moist and rainy months of winter and spring?

Arthur Young also lighted upon much the same truth as that which Mr. Lawes has arrived at, regarding the powers which nitrogenous manure gives to plants to avail themselves of mineral manure, and indeed, the mutual assistance which the two great classes of manure give to each other. He applied fresh horse-dung to ten pots of earth,—some sand, and some loam, some with charcoal or ashes in addition, and all previously cropped with barley for four years without manure, or with charcoal or ashes only. "There are some very remarkable circumstances in the result. The dung takes very little effect on the loam alone; but in those pots which four years ago had an addition of ashes or charcoal, it has a very considerable one; in two instances it more than doubles the crop, and in two others nearly quadruples it. The reflections which this suggests are obvious; it shows that there is a vast difference in the farmer's profit where he lays his dung; that if he has a field manured some years back with any substance that contains, as these ashes probably do, an alkaline salt, the operation of which resembles (though not exactly) that of a calcareous earth, he will find a much greater advantage in spreading his dung on such a field, than on one that has not been manured at all. If successive experiments confirm this result, they will open the way to conclusions of the highest importance to practical agriculture, and lead to a conduct of manures that has been by no means sufficiently considered. The same observation, however, does not extend to sand; for it is remarkable that the superiority of the dung on that soil in the pots before manured is inconsiderable, except in one instance, and in that it does not nearly approach to its effect on loam. I must take this opportunity to remark how very slowly knowledge in the science of agriculture must be gained; if I had continued this trial but three years, this result, which is certainly remarkable, would have been lost: how precious is time in a pursuit, when four years are required for a single experiment!"

But more than this, we find him testing the influence of different gases upon vegetation; not when applied to the leaves of plants, but introduced into the soil in which they were growing—certainly a novel kind of manuring. This was owing to the notion of Priestley, which excited a considerable attention at the time, that phlogiston or inflammable air (hydrogen) was the food both of plants and animals. Every day a stream of gas was thrown up through the earth in the pots, the "inflammable air" being obtained from "iron-filings and oil of vitriol diluted," the "fixed air" from "chalk and oil of vitriol diluted," and the "nitrous air" from "iron-filings and spirits of nitre diluted," though sometimes he mixes these materials or their gaseous products together. The conclusion was in favour of the hydrogen, as beneficial when applied to the soil.

Another series of experiments on the fertility of different soils is well worth attention. Among others tried were two soils taken from fields of very different value,—one poor almost to a proverb, the other very superior. Half a peck of each was potted, and made to yield barley; the produce proving nearly equal in every respect; whence then the difference found in the common culture? The samples of earth appeared much alike in the hand, and bore the same produce in the pots: the difference must be sought then in some peculiar conditions of the respective fields. The fact turned out to be that the under-stratum of the poor land was cold, wet, clay marl; while that of the other was a dry, sound, gravelly loam. The latter field wanted no draining, and might be kept flat; the former was wet and cold, and must be on the ridge. But in pots this essential difference of circumstances was absent, and both being equally well drained, they were reduced to an equality; nor was it surprising that the more moist soil should succeed rather the best.

Such were some of the researches of an agricultural philosopher twenty years before those of Humphrey Davy.

When Arthur Young experimented upon different soils, applying all sorts of substances, and even passing different gases through them by way of manuring, and when he endeavoured to estimate the measure of fertility in a soil by the quantity of gas which could be expelled from it by heating, he was laying the foundation for that study of the causes of the earth's productiveness which has only very recently assumed an intelligible and reliable form. Indeed, the importance of chemical science, in determining the principles of agriculture, was felt in his time as well as in ours; for as far back as in 1786 he writes: "I scarcely know one man of science, who has treated the subject, that has not been sensible of the connexion between chemical inquiries and the principles of agriculture, and endeavoured to call the attention of such as are engaged in farming pursuits to this material support of the art." Again he says: "To imagine that we are ever to see agriculture rest on a scientific basis, regulated by just and accurately drawn principles, without the chemical qualities of soils and manures being well understood, is a childish and ignorant supposition. If you do not know what already is in the soil, how is it possible you should know what you ought to spread upon it? If inflammable air is the food of plants, how best generate and absorb it? What mixtures: what proportions?" And in 1789 we find in the "Annals of Agriculture" the following statement of the needs of agricultural science: "Of all the researches that ought to be the most interesting to a farmer, I know none that demand more attention than those whose object is to ascertain the substances on which fertility depends. It concerns very intimately the foundation of his art: since it must be obvious to every one that if we are not acquainted with the principles of fertility, we must go blindly to work in endeavouring to render our fields fertile."

The practical farmer may say, it is true, that he never spreads dung upon his land but he is sure to reap the benefit; which may be, and probably is, true. But he knows, from the same experience, that there is a great difference in the degree of fertility which results from spreading different dungs, in different states, and in different seasons; and if it is asked why the result varies, he is quite at a loss for an answer. If, though, he is ignorant of this, he must be utterly incapable of applying the experience of one period to the use of another. Some farmers spread their dung on the land after sowing, and leave it exposed to all weathers on the surface: the theorists who contend that imbibing an acid from the air is the chief benefit of manuring, will doubtless say that the practice is right, and founded on just principles. Other farmers, who plough it in immediately, will be equally defended by others who are of opinion that the dung itself is, or contains, the food of plants, and that exposition to the atmosphere lessens instead of increasing it. Both of these practices cannot be right: which is so? To answer that question, the manure must be analyzed, and we must know what it is that dung contains that really feeds plants. We must endeavour to discover what there is in rich soils, which is not to be found in poor ones, or, if found at all, in a much less quantity: and if, in addition to such our inquiry, we discover the same substance in manures and in plants, and if we vary these inquiries greatly, and examine them in every light, by a great variety of experiments, we shall then be much nearer the desired end, and shall be much more able to pronounce with some degree of certainty on the propriety of a great many practices on which, at present, if we are in any degree modest, we must be content to do little more than express our doubts.

Davy's "Elements of Agricultural Chemistry"—a course of lectures for the Board of Agriculture, delivered between 1802 and 1812—first offered to the farmer the kind of information which Young shews was urgently required. With respect to "what it is that dung contains which really feeds plants," what reply did he furnish? He found, as Jethro Tull had found before him, that plants can only absorb substances in solution or in a gaseous form: hence the great object in the application of manure should be to make it afford as much soluble matter as possible to the roots of the plant, and that in a slow and gradual manner, so that it may be entirely consumed in forming its sap and organized parts. Of what ought this soluble matter to consist? He tells us that "mucilaginous, gelatinous, saccharine, oily and extractive fluid, and solution of carbonic acid in water, are substances that in their unchanged state contain almost all the principles necessary for the life of plants." He tried experiments with these compound substances as manures; and though the results led him to recommend only a partial fermentation of farm-yard manure and a careful prevention of waste both of soluble riches in the drainings of dung-heaps and of volatile ammonia and other gases evolved and lost during the fermenting process, yet how different were his ideas of the true food of plants from those now generally entertained! now that we have got beyond the organic composition of vegetables, and resolve them by analysis into their ultimate elements, whether gases or solid minerals; and nitrogen and phosphorus are the "universal specifics" for all crops and soils.

Then as for the inquiry, "What is there in rich soils which is not to be found in poor ones, or, if found at all, in a much less quantity?" he says that the fertility of a soil depends upon the state of division and mixture of the earthy materials and the vegetable and animal matter, rather than upon any chemical action of the various ingredients. As the amount of mineral matter taken up by a plant is so small, and "the earths cannot be supposed convertible into other substances by any process taking place in the soil," the chemical constituents of a soil are of little consequence compared with its physical and mechanical properties, though noxious substances may be present which require "correction," and though some soils exert a chemical energy in preserving vegetable nourishment within them. Thus we find Davy teaching a very different doctrine from Liebig's "mineral theory," and disagreeing with the still later views of agricultural chemists on the connexion between the chemical constituents of a soil and its productiveness for special kinds of cropping.

How clearly do we perceive the magnitude of the advance made by modern science since the days of Davy, when we find him commending bones as a manure!—not so much for their largely-contained phosphate of lime, as for their very considerable percentage of decomposable animal substances, such as fat, gelatine, and cartilage. "Horn," he says, "is a still more powerful manure than bone, as it contains a larger quantity of decomposable animal matter. The earthy matter in horn, and still more that in bones, prevents the too rapid decomposition of the animal matter, and renders it very durable in its effects." Little did Sir Humphrey think that we should one day pay a very handsome price for this same "earthy matter," or phosphate of lime, not in such a condition as to "prevent rapid decomposition," but, rendered soluble by combination with sulphuric acid, precisely that it may operate as quickly as possible in effecting decompositions and combinations in the soil in order to feed vegetation.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MEETING AT CHELMSFORD.

The Royal Agricultural Society has long owed Essex a visit. In the annals of modern agriculture it is a county which occupies an especially prominent position, not perhaps so much for any superiority it has attained, as for the material it has afforded for interesting and profitable discussion. Even if confined to its own limits, and its own organs of communication, the battledore and shuttlecock of what good farming really is, or should be, has now for sometime been kept up with great spirit. We have had what Lord Portman terms "the hard practice" of Mr. Hutley ever ready to test the science-made-easy of his neighbour, Mr. Mechi; the sound and careful deductions of Robert Baker; the varied experience of Fisher Hobbs—all speaking directly to the question of how their acres may be made to pay the best for cultivation. The doings in Essex, however, have a fame which has gradually extended far beyond their own boundary lines. A variety of circumstances have, too, brought these sayings and doings continually under the cognizance of the Royal Agricultural Society. It was one of the first counties from which the Journal asked a report; it numbers from its district, at least, some of the most practical and zealous of those who sit at the Council Board: while it has, moreover, advanced very considerably on to the improved system of modern husbandry.

The Society, then, may have determined on its selection for this year with some confidence. The result has fully justified any such anticipation of success. Taken uniformly, perhaps the best meeting the Royal Agricultural Society of England ever held has been just now celebrated at the capital town of the county of Essex. Generally well arranged and provided for, the anniversary has been equally well supported. The most famous artificers in machinery, and the most renowned breeders of stock, have alike done their best. Their efforts, too, have not been unappreciated. We believe that as a matter of business the implement makers never had a better week, while the sale of stock has also been altogether unprecedented. So many ready purchasers never before thronged the show yard, and, accordingly, prices for Short-horns, Southdowns, and Suffolks, ranged up to almost anything the aspiring ideas of the seller, or the eager fancy of the buyer might suggest.

In partial deference to the prayer of the petitioners, the experiment is now being made of taking only a triennial test of the same implement. It was tried at Chelmsford for the first time, and, without looking to any ultimate effect or result of such a system, with most unquestionable success. Never was the machinery under inspection so fully or so fairly tried. Seldom, as has heretofore been the case, were either the judges or the exhibitors unduly hurried, or outrageously overtasked. The week commenced with these gentlemen towards the latter end of that which preceded the opening of the exhibition; the implements selected for this year's trial being chiefly those employed in the cultivation of the soil—ploughs, harrows, subsoilers, scarifiers, and so forth. Amongst all these the great advance was soon found to be with that much canvassed invention, the steam-plough. Since it was laughed out of the yard years back, this "coming" aid to husbandry has enjoyed but little success. It has certainly been talked of, and written of—only hitherto to make its failure in practical operation but the more apparent. Singularly erratic in its movements, decidedly with a will of its own, going and stopping, or never going at all, and doing what work it did in a style more extraordinary than promising, ploughing by steam did not take with the public. The five hundred pound prize of the Society, as with a similar grand premium for a new guano, so looked like a very cheap offer after all. This five hundred pounds, however, is now claimed; and however the judges or the Society may hesitate, popular opinion has gone far to award it. Ploughing by steam has at length been accomplished. The Chelmsford meeting showed its work beautifully done; the men with a perfect command over the implement, and everything gone through as methodically as with the "Gee" that started "Boxer" and "Blackbird," or the "Come-hither" that turned them at the headland. Fowler's well-known draining plough, with the aid of Messrs. Ransomes' long experience and ample powers, figures now as a yet more likely surface-plough. We can only repeat there was but one opinion as to its performance—that it was more than promising. No doubt much has yet to be achieved before it can come into common use; but the steam-plough is no longer a bye-word, with those at least who have witnessed its capabilities; and an attempt at any rate will be at once made to employ it in the regular business of the farm. The one exhibited was purchased during the week by an Essex landed proprietor, Mr. Cramp, of Witham, who proposes to let it out, like the thrashing-machines, for the use of his tenantry and neighbours. We shall not here enter into any minute detail of its action, coming as this will more properly within the province of our own correspondent to whom our report on the implement department is entrusted. He, too, will have to speak of Mr. Smith's plough, favourably introduced to notice some little time since at a meeting of the Society of Arts; as well as to the improvements in Boydell's wonderful piece of machinery —ready now to go anywhere or to do anything; and as for ploughing, if the share will only stand, to turn either the softest loam or the pavement in Piccadilly.

However successful the Messrs. Ransome might be by the aid of steam, they were by no means so fortunate when once more descending to ordinary means. For the best ploughs of all sorts their old opponents, the Howards, carried all before them. For general purposes, for heavy land, for light land, or ridge ploughing, still the Bedford firm was declared the best. It is only right to say that the work here generally was unusually good, while it is equally as becoming to add that we heard no question whatever as to the decisions given. The steam-plough has still a formidable rival in the nice art of what continued study and ability have adapted to the purposes of the soil and the powers of the horse.

We must leave the prize list, and the report which will follow it, to speak more fully to this department of the show. We may mention, however, that after some trials on rye, the award for the reaping machines is again deferred till harvest—a postponement by the way that gave but little satisfaction either to the public or the exhibitors last year, and that it will be better not to set up as a precedent. Messrs. Burgess and Key, the successful firm last season, and Dray's and Crosskill's machines were all in favour, so far as their different merits were exhibited. In another branch on which the powers of steam are employed were found an immense number of thrashing and winnowing machines—Ransomes, with a very neat and perfect one on a small scale—Clayton and Shuttleworth, in all their customary strength—Tuxford, the winner of last year's memorable contest—Hornsby, still as useful as ever —and Garrett, with a really fixed engine, built up with brick-work, and fitted like many others, not merely for thrashing, winnowing, and grinding, but almost every other purpose of the homestead. As might be supposed, the bazaar section of this department, where implements were not specially tried, exhibited no great novelty. The most remarkable amongst these, at least to us, were Barrett and Exall's highly commendable saw for turning and cutting wood into any shape and curve; and an improvement by Mr. Chambers, already famous for his own manure drill, on Chandler's, for the distribution of liquid manure. This depends something on the same principle as his own, the liquid falling by a drop instead of in a stream, and is palpably, in direct use and saving, a great advance on anything of the sort yet devised. It is entered with the companion drill, on the stand of the Messrs. Garrett.

If we can speak in high terms of the display of implements, we may say as much or yet more for the show of stock. When the turn of the latter did come, they certainly had the call. The freshest of visitors could scarcely resist diving at once through the many famous stands of machinery, intent above all things else to get a glimpse of the famous Short-horn bull—of the Southdown that had beaten Jonas Webb—or for a long look at such a range of Suffolk horses as no man ever saw before. Without going into statistics, it struck us, in walking through them, that the classes of Shorthorns were not numerically so strong as we have seen them. There was no mistake, however, about the excellence of some of them. Lord Feversham's prize bull, for instance—Gloucester—which took the first prize in Paris last year and the second at Carlisle, was only here a commended animal. One might so look for something extraordinary to stand so far before him. And such is the case. For shape and quality—a fine, full, but compact frame, a head that shows the highest breeding, and a touch that tells it still more, we at least, in our time, have never seen so near an approach to a perfect animal as "Master Butterfly" now is. We confess that, after the character Mr. Towneley has obtained for "forcing," we did not expect this bull could have so much further developed himself, since we saw him last year. As a young animal he always looked very like that excellence which has now been realized. His condition, moreover, was not against him, and altogether never did a high-priced animal look more like "a return for the outlay." He goes to Australia, through the agency of Mr. Strafford, at the unprecedented sum of twelve hundred guineas—a thousand, and that long since, having been hitherto the limit for a Shorthorn. For the information of such of our readers as deal in such laudable curiosities, we may remind them that a portrait of "Master Butterfly," with his full pedigree and performances, appears in the *Farmer's Magazine* for April last. The second Master Butterfly was sold to Mr. Majoribanks for three hundred guineas.

Mr. Ambler, who took the second prize in this class with a highly-bred animal, sells his prize bull-calf for two hundred; indeed, the run upon this stock—what with France, Australia, and America to compete for it, is more extraordinary than ever. At Chelmsford the supply by no means equalled the demand. Colonel Towneley, as he is now written, it will be seen, stood equally high in the cow classes; Mr. Booth, of Warlaby, taking the first prize with the only animal he exhibited. We doubt, though, whether the sort here was altogether so good as these two celebrated breeders have had before to encounter.

A very good show of Herefords, with Lord Berwick, and a new man or two to the fore, and a mixed lot of Devons, complete the array of regulars. Mr. Quartley's prize Devon bull was a long way the best of the breed—famously furnished thoughout, though hardly so much of him as people now want for their money. Indeed we are afraid, if we may whisper it, there is a growing opinion with many that the pure Devon is but a fancy article after all. It is certain their numbers do not much increase in the show-yard. In the "other breeds" the great novelty was the foreign cattle, with French judges to award the very handsome premiums offered by the Society. The only one our countrymen seemed to approve was a beautiful, even, white Charolaise cow. The other premiums were only of a complimentary character.

One of the first rumours we heard, on entering the town, was the wonderful show of Southdown sheep. All the best men were here; and Mr. Webb, Mr. Rigden, Mr. Sainsbury, and Mr. Lugar, all sure to win. Strange to say, not one of them did; two breeders that have long been well content to play a second part now standing first. Lord Walsingham, however, has been long creeping on, and Mr. Overman has been either a judge or an exhibitor for the last eighteen years. Great was the astonishment on the Babraham Paris prize sheep being reckoned only the second best, and strong the discussion which ensued. There is no mistake, though, about the one that beat him—Mr. Overman's shearling ram; an animal of very magnificent frame, and that, like Mr. Webb's, has been on his travels this summer, having been out for the last three weeks, and a first prize sheep at Norwich and Stowmarket. However much canvassed by friends and foes, the effect of the award in the yard was instantaneous; a great many sheep from the Weasenham flock being let at very high prices, three at fifty, sixty, and eighty guineas, and the prize ram sold to the French Government for a hundred and fifty guineas! One result of this decree must be a source of advantage to the shows of the Society. For a year or two at least, until he regains his accustomed rank, we may most probably find Mr. Jonas Webb again in the list of exhibiters. He has had his share of good things, and can well afford to bear an occasional change of place. In fact, considering how his own flock is now distributed, it would be odd indeed if he be not occasionally beaten with his own weapons. All the winning sheep looked like his sort—larger framed, and more of them every way, than the thorough-bred ones the Duke of Richmond and Sir John Shelley send us from Sussex. Though opposed to some extraordinary sheep of Mr. Sainsbury's, there was little cavilling as to the superiority of Lord Walsingham's. His first prize ram was very perfect, so well and fully developed that it required a practised eye to detect any failure; his breadth of frame quite astonishing, and his thighs, too often a weak point in the Downs, very good. It will be seen his lordship had it also all his own way with the ewes; and when we come to consider the perseverance he has shown with his flock, and the steadiness with which he has supported the Society, there is no one who could be more honestly congratulated on his now signal triumph. His Lordship sells his first pen of prize ewes to go to America, at a hundred guineas.

In the Long-wools the advance of the Cotswolds was most remarkable. They were in far more favour than usual, although it is said the foreign trade is just at present taking strongly to the Leicesters. Mr. Pawlett here again had the lion's share, while the names of Messrs. Lane, Beale Browne, and Garne are once more associated with the successful Cotswolds. The Chelmsford Sheep Show resolves itself into one grand query for the after-consideration of the Society—Is a long-wool man fit to judge a short-wool sheep?

Regarded either for its general excellence, or for the still gradual improvement that is taking place in this department of the Society's Exhibitions, the horse-show was very remarkable. It is but three years since that at Gloucester the entry of this description of stock was quite unworthy of the Yard. There is no concealing the fact that much of this increased attraction cannot be claimed by the Council of the Society. They have taken but little care to provide anything of the kind; and, had it not been for the Local Committee in Chelmsford, as with local authorities in Lincoln and Carlisle, more than half the horse-show would have been wanting. We hope by another year that these premiums will come directly from the Society, and that the Direction will not ignore, as it were, in their own prize-list, that noble animal the horse in his noblest form. If, as a nation, we have any one to be especially proud of, he it is, and it becomes a national Society to honour him accordingly. We are happy to see a motion to this effect was proposed at the last general meeting, and we have reason to believe it will be persevered with. We have often ourselves, ere this, impressed the policy of more attention being given to this section of the show; and the management need only look round the yard to be convinced how popular it is with the public. As we have already hinted, the show of Suffolk horses, in all their different classes—stallions, mares, and young animals—was extraordinary for its strength both in numbers and merit. There were but few inferior animals to detract from the uniform character of this fine breed of cart-horse. Curiously enough, though, the first prize for the best stallion was given against them—to a Clydesdale horse, "Britain," the property of His Royal Highness Prince Albert. It would be only false delicacy to conceal the fact that the judges stood very much alone here. Good before, and a light, cheerful-looking horse, the Clydesdale had hardly that perfect form which should mark a prize animal of any kind. He was rather wanting behind, with thin, weak thighs, and hardly of that weight which is deemed so essential for a draught horse. It is only fair, however, to say that his action was reported to be excellent; but of this the public had no opportunity of judging. His stock, too, are said to be very good, and, like himself, frequent winners in the North.

It will be found that the Suffolks had it, with this exception, all their own. Indeed, the show of other sorts was not of the average strength of the last two years; the difference in the locality, no doubt, in great measure accounting for this. In the sales of the week we may mention that Mr. Barthropp disposed of his second prize mare (with her foal)—a prize winner so far back as the Exeter meeting—for a hundred-and-fifty guineas. She goes into Wales.

Taking a long running jump from number 328 to 665, we come to more horses distinguished under the head of "Special Prizes." It scarcely need be remarked that this arrangement is as inconvenient as possible in the catalogue, and quite as much or more so in the yard. No. 300 and 600 stand almost side by side; and if the aim were to puzzle any one who wished to make the most of his time, it could hardly be more successfully attained. We only trust by next year that many of these "Specials" will fall into regular succession; and then we may leave them with all confidence to that organ of "order" which so admirably distinguishes Mr. Brandreth Gibbs. The division here included every variety of breed but the cart horse—thorough-bred stallions, hunters, hacks, and young stock. They were nearly all good, the hacks and hunters particularly so. Of those now in work there were many to make a man's mouth water; such as Captain Barlow Robinson horse, which took the first prize at Lincoln; Mr. Bullock's grey that stood beside him; Mr. James's hack mare; and in the same class one of the most handsome cobs ever seen. She was a bay Welsh mare, standing thirteen hands and a-half, the property of Mr. Beever, of Cowbridge, and her price a hundred-and-fifty! Nothing but her size could have prevented her being the first of her class. The prize for thorough-bred stallions went deservedly enough to the British Yeoman, who showed so well at Carlisle last year. He is not only himself a magnificent horse, but the sire of some capital stock. The entry against him was not very strong.

A famous show of pigs, and a far better than usual one of poultry, complete the catalogue. Amongst the former the over-feeding proviso was most cavalierly treated: some of the unhappy animals looked like dying where they lay; and if they do ever return to a fit state for "breeding purposes," it will require a deal of fasting and physic to do it. We only wish Professor Simonds would turn his attention a little more to this, and even on his own authority expel a few such offenders. The public treat such exhibitions just as they should do—as the mere farce it is; and nothing is more calculated to bring the Society into question. Some beautiful Berkshires and white pigs, large and small in great force, were chiefly distinguished. We were rather disappointed at not seeing "The Improved Essex" better represented. The district required it of them. In the poultry, the Dorkings held their well-deserved ascendancy, backed by some choice Hamburghs; with the Cochin-Chinas still sonorous and unsightly as ever.

The dinner took place on the Thursday, and the Pavilion, laid for a thousand, was nearly filled. It was noticeable for the imposing array of foreign visitors, and the good addresses they delivered. Monsieur Trehonnais—half an Englishman, however, by this—began with a very catching one. He was followed by the Marquis de Vogue, who combined with a capital delivery a great deal of excellent matter, and commanded a cheer for almost every sentence. We never witnessed anything more thoroughly effective. On our own side, the speech of the occasion was that of the Reverend Mr. James, when giving "The Labouring Classes." The best compliment we can pay him is to recommend our readers to turn to it, in our report of the dinner. Mr. Waddington answered for the railways. We wish the compliment had been better deserved. The arrangements, so far as we saw of them, were quite worthy of the Eastern Counties.

A handsome flower show, a slow ball, with flags flying, bells ringing, and evergreens bending over the much-admiring visitor, made out a memorable week of it for the good town of Chelmsford.

PRIZES FOR CATTLE, &c.

SHORT-HORNED CATTLE.

JUDGES.—Captain Thomas Ball, Stephens Green, Dublin.
John Grey, Dilston, Northumberland.
Thos. Parkinson, Hexgreave Park, Southwell, Notts.

CLASS 1.—Bulls, calved previously to the 1st of July, 1854, and not exceeding four years old.

First prize of £30 to Lieut.-Col. Towneley, of Towneley Park, Burnley, Lancashire.

Second prize, £15 to Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

Commended.—Mr. Langston's bull, and Lord Feversham's two bulls.

CLASS 2.—Bulls, calved since the 1st of July, 1854, and more than one year old.

First prize, £25 to F. H. Fawkes, of Farnley Hall, Otley, Yorkshire.

Second Prize, £15 to Mark Barroby, of Dishforth, Thirsk, Yorkshire.

CLASS 3.—Bull calves, above six and under twelve months old.

The prize of £5 to Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

CLASS 4.—Cows, in milk or in calf.

First prize of £20 to Lieut.-Col. Towneley, of Towneley Park, Burnley.

Second prize of £10 to Lieut.-Col. Towneley.

CLASS 5.—Heifers, in milk or in calf, not exceeding three years old.

First prize of £15 to Lieut.-Col. Towneley.

Second prize of £10 to Richard Stratton, of Broad Hinton, near Swindon, Wilts.

CLASS 6.—Yearling heifers.

First prize of £10 to Richard Booth, of Warlaby, Northallerton, Yorkshire.

Second prize of £5 to Charles Pascoe Grenfel, of Taplow Court, Maidenhead, Berks.

HEREFORDS.

JUDGES.—Samuel Bloxsidge, Warwick.
William Tindall, Wheatley, near Doncaster.
John Williams, Kingsland, Herefordshire.

CLASS 1.—Bulls, calved previously to the 1st of July, 1854, and not exceeding four years old.

First prize of £30 to Lord Berwick, of Cronkhill, Shrewsbury.

Second prize of £15 to Edward Price, of Court House, Pembridge, Hereford.

Commended.—Mr. Taylor's bull.

Class 2.—Bulls, calved since the 1st of July, 1854, and more than one year old.

First prize of £25 to William Raester, of Thinghill, Withington, Hereford.

Second prize of £15 to Edward Williams, of Llowes Court, near Clirow, Radnor.

Highly Commended.—Mr. Rea's bull.

Class 3.—Bull calf, above six and under twelve months old.

The prize of £5 to William Perry, of Cholstrey, Leominster.

Commended.—Mr. Fisher Hobbs's bull calf.

Class 4.—Cows, in milk or in calf.

First prize of £20 to William Perry, of Cholstrey, Leominster.

Second prize of £10 to Philip Turner, of the Leen, Pembridge, Leominster.

Highly Commended.—Mr. Walker's cow.

Class 5.—Heifers, in milk or in calf, not exceeding three years old.

First prize of £15 to Lord Berwick, of Cronkhill, Shrewsbury.

Second prize of £10 to William Raester, of Thinghill, Withington, Hereford.

Class 6.—Yearling heifers.

First prize of £10 to William Raester, of Thinghill, Withington, Hereford.

Second prize of £5 to Walter Maybery, of Brecon.

Highly commended.—Mr. Maybery's heifer.

This class was generally commended.

DEVON CATTLE.

Judges.—Samuel Bloxsidge, Warwick.
William Tindall, Wheatley, near Doncaster.
John Williams, Kingsland, Herefordshire.

Class 1.—Bulls calved previously to the 1st of July, 1854, and not exceeding four years old.

First prize of £30 to John Quartly, of Champson Molland, South Molton, Devon; second of £15 to W. M. Gibbs, of Bishops Lydeard, Taunton.

Highly commended.—Mr. Farthing's bull.

Class 2.—Bulls calved since the 1st of July, 1854, and more than one year old.

First prize of £25 to H.R.H. Prince Albert; second of £15 to John C. Halse, of Molland, South Molton, Devon.

Highly commended.—Mr. Corner's bull.

Class 3.—Bull calf above six and under twelve months old.

The prize of £5 to George Turner, of Barton, Exeter.

Class 4.—Cows in milk or in calf.

First prize of £20 to James Quartly, of Molland House, South Molton, Devon; second of £10 to Walter Farthing, of Stowey Court, Bridgwater.

Highly commended.—Mr. William B. Gibbs, Mr. Quartly, and Mr. Halse's cows.

Class 5.—Heifers in milk or in calf, not exceeding three years old.

First prize of £15 to James Quartly, of Molland House, South Molton; second of £10 to H.R.H. Prince Albert.

Class 6.—Yearling Heifers.

First prize of £10 to Edward Pope, of Great Toller, Maiden Newton, Dorset; second of £5 to James Hole, of Knowle House, Dunster, Somerset.

This class was generally commended.

OTHER BREEDS.

[Not including Shorthorns, Herefords, or Devons.]

Judges.—Samuel Bloxsidge, Warwick.
William Tindall, Wheatley, near Doncaster.
John Williams, Kingsland, Herefordshire.

Class 1.—Bulls calved previously to the 1st July, 1854, and not exceeding four years old.

First prize of £20 to Lord Sondes, of Elmham Hall, Thetford (Suffolk); second of £10 to James S. Turner, of Chyngton Farm, Seaford, (Sussex).

Class 2.—Bulls calved since the 1st of July, 1854, and more than one year old.

The prize of £10 to G. D. Badham, of the Sparrows Nest, Ipswich (Suffolk).

Class 3.—Cows in-milk or in-calf.

First prize of £10 to James Gorringe, of Tilton-Selmeston, Lewes (Sussex); second of £5 to Thomas M. Hudson, of Castle Acre, Swaffham (Suffolk).

Class 4.—Heifers in-milk or in calf, not exceeding three years old.

The prize of £10 to Lord Sondes, of Elmham Hall, Thetford (Suffolk).

Class 5.—Yearling Heifers.

The prize of £5 to G. D. Badham, of the Sparrows Nest, Ipswich (Suffolk).

HORSES.

Agricultural Horses generally.

Judges.—Patrick Graham Barns, Limekills, near Glasgow.
William Greaves, Matlock-Bath, Derbyshire.
Wm. Charles Spooner, Eling, near Southampton.
John Warsop, Alconbury Manor House, Huntingdon.

Class 1.—Stallions for Agricultural purposes, foaled previously to the 1st of January, 1854.

First prize of £30 to H.R.H. Prince Albert (Clydesdale); second of £20 to Manfred Biddell, of Playford, Ipswich (Suffolk).

Highly commended.—Mr. T. B. Hildyard's grey stallion.

Commended.—Mr. Barthropp's chesnut Suffolk; Mr. John N. Willes' half-bred chesnut Suffolk; Mr. Geo. John Rust's bay Essex; Mr. Buller's brown Oxfordshire; Mr. Edwd. R. Blewitt's and Mr. Cragg's stallions.

Class 2.—Stallions for Agricultural purposes, foaled in the year 1854.

First Prize of £20 to G. M. Sexton, of Earl's Hall, Cockfield, Sudbury (Suffolk); second of £10 to G. D. Badham, of the Sparrow's Nest, Ipswich (Suffolk).

Highly commended.—Messrs. Samuel and Robert Spencer's brown roan stallion.

Commended.—Mr. Samuel Sparshott's bay, and Mr. John William's chesnut Suffolk stallions.

Class 3.—Agricultural Stallions, foaled in the year 1855.

The Prize of £15 to Samuel Clayden, of Little Linton, Cambridge (Suffolk).

Highly commended.—Mr. Matthew Berridge's black Leicestershire Stallion.

Class 4.—Mares and Foals for Agricultural Purposes.

First Prize of £20 to George Carter, of Danbury, Chelmsford (Suffolk); second of £10 to N. G. Barthropp, of Cretingham Rookery, Woodbridge (Suffolk).

Highly commended.—Mr. Charles Cordy's chesnut Suffolk mare and foal.

Class 5.—Two-year-old fillies for Agricultural Purposes.

First Prize of £15 to Samuel Wrinch, of Great Holland, Colchester (Suffolk); second of £10 to Samuel Clayden, of Little Linton, Cambridge (Suffolk).

Highly commended.—H.R.H. Prince Albert's brown Clydesdale filly.

Commended.—Mr. Saml. Wolton's chesnut Suffolk; Mr. John Ward's chesnut Suffolk; and Mr. Edwd. Holland's bay Gloucester fillies.

This class was generally commended.

Dray Horses.

Class 1.—Stallion, foaled previously to the 1st of January, 1854.

The Prize of £20 to William Baker and Son, of Bury Farm, Stapelford, Cambs.

Highly commended.—Mr. Robt. Whitehead's grey stallion.

Commended.—Mr. Robt. Kersey's chesnut Suffolk stallion.

Class 2.—Stallion foaled in the year 1854.

The Prize of £15 to Charles Timm, of Scrooby House, Bawtry.

The Judges *especially commend* two cart stallions exhibited by Monsieur Ferdinand Robbe Duchateau, as specimens of French horses.

SHEEP.

Leicesters.

Judges.—William Torr, Aylesby Manor House, Grimsby.
William Hesseltine, Worlaby House, Brigg.
Robert Smith, Emmett's Grange, South Molton.

Class 1.—Shearling Rams.

First prize of £25 to Thomas E. Pawlett, of Beeston, Sandy, Beds; second of £15 to Thomas E. Pawlett, of Beeston.

Commended.—Mr. Thomas E. Pawlett and Mr. Robert W. Creswell's rams.

CLASS 2.—Rams of any other age.

First prize of £25 to Thomas E. Pawlett, of Beeston; second of £15 to R. W. Creswell, of Ravenstone, Ashby-de-la-Zouch.

CLASS 3.—Pens of five Shearling Ewes of the same flock.

First prize of £20 to J. G. Watkins, of Woodfield, Ombersley, Worcester; second of £10 to George Turner, of Barton, Exeter.

SOUTHDOWN OR OTHER SHORT-WOOLLED SHEEP.

JUDGES.—George Brown, Avebury, near Marlborough.
Henry Chamberlain, Desford, near Leicester.
Peter Purves, The Grove, Brampton, Huntingdons.

CLASS 1.—Shearling Rams.

First prize of £25 to Henry Overman, of Weasenham, Rougham, Norfolk; second of £15 to Jonas Webb, of Babraham, Cambridgeshire.

CLASS 2.—Rams of any other age.

First prize of 25*l.* to Lord Walsingham, of Merton Hall, Thetford; second of £15 to Lord Walsingham.

CLASS 3.—Pens of five Shearling Ewes of the same flock.

First prize of £20 to Lord Walsingham; second of £10 to Lord Walsingham.

LONG-WOOLLED SHEEP.

Not qualified to compete as Leicesters.

JUDGES.—Robert Boughen Aylmer, Westacre Abbey, Norfolk.
Edmund Lane Franklin, Ascott, near Wallingford.
Nathaniel Chamerlain Stone, Rowley Fields, Leicst.

CLASS 1.—Shearling Rams (Cotswolds).

First prize of £25 to James Walker, of Northleach, Gloucester; second of £15 to Thomas Beale Brown, of Hampen, Audoversford, Gloucester.

CLASS 2.—Rams of any other age.

First prize of £25 to William Lane, of Broadfield Farm, Northleach, Gloucester; second of £15 to William Garne, jun., of Kilkenny Farm, Bibury, Gloucester.

Commended.—Mr. George Fletcher and Mr. John Garne's Cotswold rams.

CLASS 3.—Pens of five Shearling Ewes of the same flock.

First prize of £20 to William Lane, of Broadfield Farm, Northleach; second of £10 to William Lane, of Broadfield Farm, Northleach.

Commended.—Mr. Thomas Walker's pen of five Cotswold ewes.

PIGS.

JUDGES.—Thomas Trotter, Bywell, near Newcastle-on-Tyne.
Charles Randall, Chadbury, near Evesham.
Arnold Denman, Stoneham, near Lewes.

CLASS 1.—Boars of a large breed.

First prize of £10 to Rev. C. T. James, of Ermington, Ivy Bridge, Devon; second, £5, to John Harrison, jun., of Heaton Norris, Stockport.

Commended.—Mr. Thomas Birkbeck's and Mr Samuel Munro's boars.

CLASS 2.—Boars of a small breed.

First prize of £10 to Thomas Crisp, of Chillesford Lodge, Woodbridge, Suffolk; second, £5, to Richard England, of Arthington, Otley, Yorkshire.

Highly commended.—Mr. John Harrison's and Mr. James Marriott's boars.

Commended.—Mr. George Mangle's and Mr. Thomas Crisp's boars.

CLASS 3.—Breeding sows of a large breed.

The prize of £10 to William B. Wainman, of Carhead, Cross Hills, Yorkshire.

Highly commended.—Mr. Henry Blandford's and the Rev. Charles T. James's sows.

CLASS 4.—Breeding sows of a small breed.

The prize of £10 to H. Scott Hayward, of Folkington, Willingdon, Sussex.

Specially commended.—Mr. George Mangle's sow.

Highly commended.—Mr. William Hatton's and Mr. Thos. Crisp's sows.

Commended.—Mr. George Mangle's two sows, and Mr. Thomas Crisp's sow.

CLASS 5.—Pen of three breeding Sow-Pigs of a large breed, of the same litter, above four and under eight months old.

The prize of £10 to Rev. Charles Thomas James, of Ermington, Ivy Bridge, Devon.

Highly commended.—Mr. William James Sadler's Berkshire sows.

Commended.—Mr. Edward Bowly's Berkshire sows.

CLASS 6.—Pen of three breeding Sow-Pigs of a small breed, of the same litter, above four and under eight months old.

The prize of £10 to Robert H. Watson, of Bolton Park, Wigton, Cumberland.

Highly commended.—Mr. Thos. Crisp's sow pigs.

Commended.—Mr. Robert H. Watson's, H.R.H. Prince Albert's, and Mr. Manfred Biddell's sow-pigs.

SPECIAL PRIZES.

GIVEN BY THE CHELMSFORD LOCAL COMMITTEE.

HORSES.

CLASS 1.—Thorough-bred Stallions.

The prize of £30 to Messrs. Robert and James Moffatt, of Newton-of-Rockliffe, Carlisle, for British Yeoman, by Liverpool, out of Fancy, by Osmond.

Commended.—Mr. Marmaduke Walker's Ptolemy.

CLASS 2.—Hunter Stallions.

The prize of £30 to Samuel Adams, of Great Waltham, Chelmsford, for Tom Moody, by The Flyer, dam by Smolensko.

Commended.—Mr. Wm. Jex's stallion.

CLASS 3.—Coaching Stallions.

The prize of £25 to George Rayson, of Highhead Castle Farm, Carlisle.

CLASS 4.—Hackney Stallions.

The prize of £25 to William Jex, of Hopton, Lowestoft, Suffolk.

Commended.—Mr. Anthony Hamond's stallion.

CLASS 5.—Hunter Mares.

The prize of £20, withheld.

CLASS 6.—Hackney Mares.

The prize of £20 to Rev. Charles Thomas James, of Ermington, Ivy Bridge, Devon.

Commended. — The Rev. Mr. Beevors and Anthony Hamond's mares.

CLASS 7.—Geldings of any age, for Hunting purposes.

The prize of £15 to Frederick Barlow, of the Shrubbery, Hasketon, Woodbridge.

CLASS 8.—Geldings under four years old, for Hunting purposes.

The prize of £10 to Earl of Darnley, of Cobham Hall, Gravesend.

Highly commended.—Sir Wilfred Lawson's gelding.

Commended.—Mr. Sandys and Mr. Emery's gelding.

CLASS 9.—Hackney Geldings of any age.

The prize of £15 to Francis Barker, of Westlands, Ingatestone, Essex.

CLASS 10.—Hackney geldings under four years old.

The prize of £10 to Frederick Barlow, of the Shrubbery, Hasketon, Woodbridge.

FOR FOREIGN CATTLE.

GIVEN BY THE SOCIETY.

JUDGES.—M. Eugéne Gareau,
The Hon. M. de Villers de Pité,
M. de Gingins d'Eclepens.

BULLS of any pure breed, calved before the 1st May, 1855.

First prize of £30 to Comte de Bouillé, à Villars (Nievre), France.

Second prize of £25 to Monsr. Charadame, à Ecouché (Orne), France.

Third prize of £20 to Monsr. Allier, Directeur de la Colonie Agricole de Petit Bourg (Seine et Oise), France.

Fourth prize of £15 to Monsr. Eluard, à Vert, Saint Denis (Seine et Marne), France.

Fifth prize of £10 to Monsr. Philipe, à Grisoller (Aix).

COWS or HEIFERS of any pure breed, calved before the 1st November, 1854.

First prize of £20 to Comte de Bouillé, à Villars (Nievre).

Second prize of £15 to Monsr. Eluard, à Vert, Saint Denis (Seine et Marne).

Third prize of £10 to Monsr. Allier, Directeur de la Colonie Agricole de Petit Bourg (Seine et Oise).

Fourth prize of £5 to Monsr. Dutrône, à Trousseauville (Calvados).

VETERINARY INSPECTOR.

Professor SIMONDS, of the Royal Veterinary College.

PRIZES FOR IMPLEMENTS.

JUDGES.

For Ploughs—
Clare Sewell Read, Barton Hall, Thetford.
Henry Berney Caldwell, Hilborowe, near Brandon.
Thomas Huskinson, Epperstone, Southwell.
Thomas Hawkins, Smallbridge, Bures-St. Mary, Suffolk.

For Harrows, Cultivators, Clod-crushers, &c.—
John Jephson Rowley, Rowthorne, near Chesterfield.
John Clarke, Long Sutton, Lincolnshire.

For Tile Machines, Draining Tools, &c.—
John Hall Nalder, Alvescote, Gloucestershire.
William Chalcraft, Bramshott House, near Liphook.

Consulting Engineers—
Charles Edwards Amos, Grove, Southwood.
John Vinet Gooch, Stratford, Essex.

For the plough best adapted for general purposes—£7, to J. and F. Howard; £4, to William Ball; and £4 to E. H. Bentall.

For the plough best adapted for heavy land—£5, to J. and F. Howard; £3, to Wm. Ball; and £2, to Ransomes and Sims.

For the plough best adapted for light land—£4, to J. and F. Howard; £2, to Ransomes and Sims; £2, to Wm. Ball; and £2, to E. H. Bentall.

For a ridge plough—£3, to J. and F. Howard.

For a turn-wrest plough - £2, to Ransomes and Sims.

For a pipe and tile machine—£5, to J. Whitehead; £4, to T. Scragg; and £5, to H. Clayton.

For a set of draining tools—£3, to Burgess and Key.

For a clod crusher for heavy land—£3, to A. Crosskill; £3, to W. Dray and Co.; £2, to W. Cambridge; £2, to Ransomes and Sims; and £2, to W. Dray and Co.

For a plain roller—£2, to Ransomes and Sims.

For a plain roller for light land—£2, to Hill and Smith; and £2, to E. H Bentall.

For a heavy land crusher—£2, to A. Crosskill.

For a subsoiler—£5, to E. H. Bentall; £4, to Hill and Smith; £4, to Dray and Co.; £3, to J. and F. Howard; £3, to Ransomes and Sims; and £1, to Barrett, Exall, and Co.

For general purpose harrows—£3, to W. Williams; £3, to J. and F. Howard; and £2, to Ransomes and Sims.

For drag harrows—£3, to J. and F. Howard; and £2, to W. Williams.

For light or seed harrows—£3, to J. and F. Howard; £2, to W. Williams; and £2, to E. H. Bentall.

For light harrows adapted as cultivators for heavy land—£3, to E. H. Bentall; £3, to R. Coleman; and £2, to Ransomes and Sims.

For light harrows adapted as cultivators for light land—£3, to R. Coleman; £3, to E. R. Bentall; and £1, to Phillips and Wood.

For a scarifier or parer—£3, to R. Coleman; and £2, to E. H. Bentall.

SILVER MEDALS.

T. F. Griffiths and Co., for a patent cheese-making apparatus.

R. Boby, for a patent corn screen.

G Pye, for the preparation of flax.

Barrett, Exall, and Co., for a patent endless band saw.

Ransomes and Sims, for a Cotgrave's subsoil plough.

Phillips and Wood, for a poppy extirpator.

VERY HIGHLY COMMENDED.

Hill and Smith's light or seed harrows.
H. Carson's cultivator for heavy land.

HIGHLY COMMENDED.

W. Busby's plough for general purposes.
Ransomes and Sims' drag harrow.
E. H. Bentall's drag harrow.
A. Crosskill's cultivator for heavy land.
Hill and Smith's cultivator for heavy land.
A. Crosskill's Norwegian harrow.
J. Comins' clod-crusher.
Utting's clod crusher.
Carson's clod crusher.
W. Cambridge's grooved roller.
Fisher's sheep-foot roller.
Ransomes and Sims' light land roller.

COMMENDED.

Hill and Smith's rick stand.
Dray and Co.'s patent tubular iron field gate.
H. Clayton's pipe and tile machine.
J. Comins' general purpose harrows.
Ransomes and Sims' light or seed harrow.
Hill and Smith's scarifier for light land.
Ransomes and Sims' cultivator on light land.
Barrett, Exall, and Co.'s clod crusher.
R. Coleman's smooth jointed roller.
Fisher's field roller.

FAVOURABLY MENTIONED.

R. Coleman's general purpose harrows.
J. Comins' scarifier for light land.

THE DINNER

took place on Thursday, Lord Portman, as President for the year, in the Chair. Amongst many others whose names might be given as eminent either as agriculturists or in other pursuits, were:—His Grace the Duke of Richmond, Lord Walsingham, Lord Feversham, Lord Sheffield, Lord Rayleigh, Lord Denman, Lord Bateman, Lord Berners, Lord Lilford, Sir Brook Bridges, Bart., M.P., Sir John Tyrrell, M.P., Sir J. Yarde Buller, M.P., Sir J. Paxton, M.P., Sir Edward Buxton, M.P., Sir W. B. Smith, M.P., Sir C. Kerrison, M.P., Sir Stafford Northcote, M.P., Sir J. H. Maxwell, Sir E. Baker, Sir J. Johnstone, Major Beresford, M.P., Mr. Evelyn Denison, M.P., Mr. Bramston, M.P., Mr. Waddington, M P., Mr. C. R. Colville, M.P., Mr. Raikes Currie, M.P., Mr. Wyndham, M P., Mr. Cobbold, M.P., Mr. P. Bennett, M.P., the Marquis de Vogue, M. Eugène Tisserand, M. Allier, M. Rath, M. Trehonnais, M. Eugene Gareau, Col. Western, Capt. Ball, the Rev. T. C. James, Col. Challoner, Professor Way, Professor Simonds, Professor Henslow, and Messrs. Wren Hoskyns, Jonas Webb, John Hudson, W. Fisher Hobbs, R. Baker, N. G. Barthropp, H. Overman, J. J. Mechi, S. Jonas, C. Lawrence, R. Milward, J. Gray, of Dilstone, &c. &c.

After the health of her Majesty, Prince Albert, the Prince of Wales, and the rest of the Royal family, had been given from the chair, and duly honoured by the company,

The Duke of Richmond, who was very warmly received, rose from the lower end of the pavilion, where he occupied his place as a steward, to propose the next toast. He knew enough of the tenant farmers of England to believe that whatever charge was made against them, no man could accuse them of ingratitude, and therefore he asked them to pay a compliment to those brave and gallant hearts who, in our army and navy, had undergone the privations of war—had proved themselves well worthy of the sires from which they sprung, and who were an honour to the land we live in. He concluded that the toast was given him to propose, because in days of yore it was his good fortune to serve in the Duke of Wellington's campaign. He then thought it was impossible ever again to find an army or navy who would better or as well perform their duties to their Sovereign or their country. But as one of those old campaigners, he felt the glorious achievements which those armies performed had been equalled by our brave and gallant bands in the Crimea. In the toast that he proposed, he begged to include the Royal Marines, and permit him as a militia officer to ask them to give them one cheer also. For any man who had seen the militia force of this country, raised as it had been by voluntary enlistment from the labouring classes of this country—from men of whom he would not now say more—as he was happy to see them as one of their special toasts that evening. He must apologize for not having made a longer speech, but he had been out of practice for the last two years from ill health and other circumstances, but he was never better than when he was on the table, looking round at his old and fast friends, the tenant farmers.

Mr. Evelyn Denison, M.P., heartily joined in the cheers with which they greeted the noble duke. He was sure he should be the just interpreter of their sentiments, if he said with what pleasure they saw him once again amongst them. He had now to propose to them "Agricultural Societies at home and abroad." He rejoiced to place thus in one line the whole family of farmers all over the world, and to drink success to those who were engaged in promoting the success of agricultural improvement and the most honourable of industries. This toast had come with peculiar propriety on that occasion, because this year, above all years which had preceded it, had been remarkable for the free intercourse and the great communication which had taken place among farmers—he referred, of course, principally to the great meeting at Paris, a magnificent spectacle, worthy of the nation, and of the sovereign who inaugurated it. We had no pretensions to rival France in taste, or to compete with the resources of an empire. We were a society of farmers, doing our own work without help from the state, and only venturing to rival our neighbours in the warmth of our friendly reception, and in the sincerity of our cordial greeting. And now he was going to venture to make one criticism upon the great Paris show, admirable in everything, but in one thing they thought deficient. They regretted very much that horses were not included in that show. The draught horses of France were excellent, of great activity and strength. The weights which they transported upon a pair of high wheels, far exceeded anything we could accomplish in this country. If horses had been included in that show, immediately a commerce would have sprung up in the two countries—those who sold their cattle and sheep would have passed on the other side and bought horses, and thus a reciprocity could have been established between the two countries. He did trust, and he said it with some foundation, that the French government would supply what he ventured to call a deficiency in the show on the next occasion. And now one word with regard to his countrymen. All classes of live stock did honour to the country, from Mr. Towneley's famous bull, the hero of so many contests, down through all the classes. There was a great deficiency in the agricultural produce. The president of the class of products said to him, "I thought you made cheeses in England, where are your cheeses?" Well, would they believe that there was only one cheese, which was called a Cheddar, and which was said to come from Scotland. But there were five gold medals and twenty-two silver medals given for cheeses. He fancied there were cheeses made in this country which might compete with Aubigny; and some counties in England which, if they would exert themselves, would give a good account of some silver and gold medals of the Emperor. One of his friends upon the jury also remarked, that he thought it was an omission that our national beverages were not accepted. No beer nor porter. He said, perhaps with audacious boldness, that he thought pale ale might show itself by the side of rosy wine. He (Mr. Denison) did not intend to give an opinion upon that subject, but at all events the venture was not made. Well now, "Success to Agricultural Societies in all parts of the world," and especially to those who had honoured them by sending delegates there to-day. To France, who for the first time had honoured their show by sending some specimens of their cattle. To Holland, Belgium, to Switzerland, they wished success to them all. They had no jealousies. Theirs was a work of peace and good-will. Their business was to give abundance to man, and to supply the true strength of nations. "Agricultural Societies at home and abroad."

M. Gareau, in reply, said: I am very much obliged to you for the manner in which you have received the toast; but you will perceive that I am a Frenchman—(cheers)—and I am afraid that half my language will not be understood by you. But I assure you that my heart is better than my speaking. I am very much obliged to the Lord President, I am obliged also to the Vice-President for what he has said of the agricultural meeting in my country; and I must express a hope that many of you will come next year, and we will do all we can to entertain you hospitably.

M. de Trehonnais.—My Lords and Gentlemen, a task has devolved upon me which, had I consulted the consciousness of my weakness and want of power, I should have declined to accept, so impressed am I with the extensive range of its scope, and with the difficulty of expressing to such an audience as this the lofty sentiments which the toast suggests in terms commensurate with its magnitude and elevation (cheers). But the thought that dictated the choice of so humble an individual as myself as the proposer of this toast appeared to me so fraught with that spirit of hospitality which characterises in so eminent a degree the British agriculturist; to form in itself so touching an episode in this great solemnity; it came and whispered to my mind in terms so sweet, "You are a stranger, it is true—foreign to our land and foreign almost to our language; but you belong to a nation with which a bond of union, strongly knitted on glorious battle-fields, have joined us, let it be hoped, for ever. You have dwelt among us. You have, in some measure, associated yourself with our agricultural societies. Your pen, your voice, your energies are ever ready to urge on the glorious movement of progress, and to do honour to yourself, honour to your country, and honour to the agriculture of all nations; we call upon you to propose 'Success to the Royal Agricultural Society of England'"—I say that coming to me in this aspect I could not resist the appeal (cheers). It was an honour to myself, an honour to the country I represent, and an homage to the agricultural interests throughout the world (loud cheers). This society is called the Royal Agricultural Society; and it it Royal, not only because Royalty has deigned to bestow upon it a gracious patronage, but because it is truly great, powerful, majestic, and imposing (renewed cheers). It is Royal because it arrays upon its muster-roll a phalanx of British agriculturists, amongst whom are the best and noblest in the land (cheers). It is Royal because it stands alone, sitting as it were upon a throne, swaying a peaceful sceptre and a hand of justice like the Kings of old, bestowing rewards to industry and persevering skill, upholding the worthy, raising the fallen, directing the inquirer, and inspiring all with sentiments of gratitude, exultation, and triumph (protracted cheering). It is Royal because it raises from the green bosom of this beautiful isle a lofty beacon, conspicuous to the world like a star in the heavens, unfurling a broad and glorious banner, which has for its heraldry that most appropriate symbol of civilization, the plough (cheers), and for a device the simple but deeply suggestive motto, "Science with practice" (much cheering). A queen, indeed, is our society, the sovereign of the English farmstead and the English harvest field, the boast of Englishmen, the pride of the land (loud cheers). We are now convened here on one of her court days. This is the levee which she holds; not, indeed, in a gorgeous palace where the floors are so slippery, and where so many, alas! stumble and fall (cheers, and laughter), but under the frail canvas canopy of her sheds, erected on the green award of an Essex field (cheers). And what a throng of courtiers she has summoned to her levee! What an amount of tribute has been brought from all England to do her homage! Nature has sent her contribution, and it is a contribution of the noblest form in which animal life can be enclosed. Engineering skill has sent the most ingenious machines that the inventive powers of man have ever created. Yonder, for the last few days, a formidable array of 50 steam-engines have been keeping up a roaring concert, not very harmonious to the ear perhaps, but how thrilling to the mind! (Hear, hear.) And then look around on this band of courtiers, and say whether the mightiest potentate in the world could gather in his gilded halls an assembly more noble, or more distinguished by their social position, the power of their minds, and the influence which they possess (cheers). It might be expected of me that I should say something upon the past history of this society, recount its progress, and extol its high deeds; but I forbear, lest I should weary your attention. Still there is one point which, in the opinion of all, must necessarily be held as entitling the society to the admiration and gratitude of the whole world; and that is, that it has brought out the hidden treasures of English agriculture, and displayed them under the broad light of that publicity and celebrity with which the verdict of her approval has stamped the men and things that are submitted to her judgment. How many men are indebted to her for the high position to which they have attained! How many thousands of our fellow-creatures derive their maintenance and livelihood from the branches of industry which she has created? Is it not through her instrumentality that English breeds, English systems of husbandry, and English application of science and practice, have been made conspicuous to the world, and attracted the notice of thoughtful men in all nations? (cheers.) It is, therefore, with the utmost confidence in your own appreciation of her merits, rather than in my humble power to set them forth, that I call upon you, to whatever nation you belong, whatever may be your social position, and whatever your influence, upstanding as in the presence of majesty, to raise from the inmost recesses of your hearts a mighty shout of "Hail and Success to the Royal Agricultural Society of England."

The toast was drunk with three times three, and followed by tremendous applause.

Lord WALSINGHAM next rose and said: I have to propose the health of a nobleman, whom if I described as a great and successful agriculturist, and as coming from a country where agriculture has made great strides, I should only tell you that which you already know, and should not have laid a claim to your notice or enlisted your sympathy in his behalf. But I have only to mention the name of Lord Portman; I feel quite sure I have not another word to say to induce you to drink his health with every honour. I feel that having been always a portion of the Royal Agricultural Society, having mixed with you, and having the same occupation as yourselves, I am sure you will receive his name with enthusiasm. The noble lord was formerly a successful exhibitor at the meetings of this Society; I am sorry we do not now see his name so often as we did, and I am sure if he would only occasionally send us a few more animals we should have to congratulate him on the success he would achieve (cheers). I know there is no one more interested in the success of the Royal Agricultural Society—he is interested that it should thrive, and be conducted in an honourable and proper system, and the credit it deserves; and I feel quite sure while such men as the noble lord give their services to it the society must flourish. I beg to give "The Health of the President of the Society."

Lord PORTMAN, in responding, said: You have been pleased a second time to place me in this high position. I have endeavoured to learn all I could, to practise it; where I found it good to make it known, and where I found it bad not to be afraid to say so. Now I think this meeting is a very successful one. I think I have a right to say we have had a good exhibition of implements, that we had a good exhibition in the stock yard: but I think I may say more, that we have a good exhibition in this room. We have thus men, cattle, and implements, and we are not ashamed to show either the one or the other to the whole world. Now let me lead you a few years back, and ask you who have lived through the whole of this part of the present century to carry your memory back to the state of agriculture when you first knew anything about it, and compare it with the present state of things. First, as to ploughing. I recollect the time when I saw six horses in a very clumsy plough; now we see two horses abreast in the best description of plough. We have had great rivalry amongst the plough-makers; and the improvement in this branch of implements in the last fifty years has been wonderful indeed. We are now going further. We have seen on this occasion a new instrument brought before us; and though I am not prepared to say that the new plough, guined by the steam-engine, is perfect, yet I do say the way is opened, and that possibly at no distant time we shall see, in the level parts of England at least, some instruments like this tilling our fields. Then go back to the system of sowing—what an immense quantity of seed upon the old mode we used to put upon the land! but we find with drilling we can do with less; and after discussions on thick and thin sowing, we find that in a middle course we arrive at considerable advantages. Next as to harvesting: in my young days this was a matter of mere physical strength—the physical strength of the arm, but now we see science brought to bear on it, and the labour of man and horses not superseded, but aided. Then as to preparing our produce for market, see what an improvement science has made in preparing it and carrying it to the market at which we wish to offer it to our customers. Again, look to the case of manuring, and see what has happened in the last 50 years, when we can recollect the small old dunghill, exposed to the wind and sun, short in quantity, badly mixed, and ill prepared; and we know that when our old friend Mr. Coke told us how to mix the various manures together we thought him a wonderful man. Now there is not a manure that can be found in any part of the world that is not brought to bear on the agriculture of this country. Then as to draining, we remember the time when the land was so wet that we should be driven to despair when a flood came like that which lately happened in a neighbouring country. And in connection with this subject I will tell you an anecdote. I have seen women making hay in pattens. The land was so wet that the women could not do without them; but that land now is a pleasure for any drainer to look upon. Then as to the rotation of crops—carry your minds back to the time when we had a corn crop and a rest; the rest we have contrived to do without, and instead of rest and weeds, in the interval we get root crops of great value. I helped as a boy to transplant from the garden the first bed of swede turnips ever grown in Dorset; and it was then said, hares were so fond of them that if a man set them, he must either fence to keep the hares out, or put on an extra pair of greyhounds to keep them in order. Now we have pretty well lived through the race of swedes, and have got to mangold as a rest for them. His lordship, after some further remarks on the progress of the society, concluded with again thanking the meeting for the compliment paid him.

Sir JOSEPH PAXTON, M.P., proposed, "The distinguished foreigners present." To which—

The Marquis de VOGUE responded. He said he spoke very bad English, and he consequently required their indulgence if he endeavoured with broken English words, but with a true French heart, to return thanks for the toast which had been proposed, and for the manner in which it had been received. They came from several parts of France—some of them had been sent by their agricultural societies to see once more on a larger scale the agricultural riches, of which they had sent such magnificent specimens to the exhibition in Paris—to inquire amongst the clever agriculturists of this country by what means they had so far advanced the productiveness of the soil and the benefits of culture. All that we (the French visitors) had seen, and all the kind information given by each of them to the foreign visitors, proved that in France they had still much to do, although much had been done, to follow their example, to attain all they (the English) had reached by the powerful and combined exercise of capital and labour. Capital was the Englishmen's great secret. With them it was abundant, intelligent, and bold. In France, agricultural capital was scarce; it was not quite entirely their fault; but he must confess it was rather lazy—he spoke of capital, not of men. They knew what men could do in this country—the labourers and soldiers were of the same breed. The gallant warriors of the British army knew what their friends of the Crimea could do in their old favourite business of war. England and France united, said the marquis, have done great things in the field of war, and great things they shall do when united on the fields of peace. A large and generous prospect is opened before us. We have no more fields of Alma or of Balaklava to cover side by side with pure, generous blood; we have no Malakoff hills to dig and overturn to hide the tremendous engines of war; but we have the soil of our fatherland to dig and overturn by the deep furrow, by ploughing, draining, and subsoiling—to conquer the depth of land, and to provide abundant substantial food for its inhabitants; and by the combined exertions of landlord and labourer to expel, by public wealth and friendship amongst all classes, the dismal threats of misery and revolution. No more for a long time, I hope, shall one be occupied by the shrill cry of the islander and the well-known clarion of the Zouaves sounding together the awful tones of war, but they shall sound the joyful flourish of peaceful victories, agricultural triumphs, and conquests towards universal comfort. We have been friends in time of war—we are friends in peace, and I must add one word more, friends in distress. I cannot forget when I was contemplating with bitter pain, our overturned houses, our rotten crops, our starved cattle eating earth and mud, instead of hay and clover—I cannot forget that at that same hour, even before our own countrymen of the distant counties had time to clasp our hands and support our energies by words of pity, and our poorer neighbours by help—at that same hour the public papers brought us the intelligence of the kind sympathies of this country—headed by the name of her most gracious Majesty the Queen of England and her noble subjects, comprising the most eminent agriculturists whom I have had great pleasure in seeing around me. No such token of sympathy can be lost for the future—such a bond cannot be easily broken; and I have reason to say we are friends in peace, in war—in weal, and in woe—and in happiness. May that friendship last for long years between these two powerful nations, for the prosperity of both, for the peace of Europe, and for the happiness of mankind. The honourable gentleman who spoke before me said I should be a happy man if I could be as much liked by my tenantry and peasantry as the Duke of Richmond, whose estate chance has given into my hands. I may say this feeling is one under the influence of which I have conducted myself in all my relations in my own country, and I shall add to this, that I express my own private feelings when I say I shall be happy to say at home that England——[Here the engine on the branch just outside the pavilion blew off its steam and sounded its whistle, and drowned in the noise the speech of the noble marquis; as it steamed away, he jocularly remarked amid much laughter]—Why, don't grumble, ye powerful child of steam—agriculture is not your enemy, but your friend, and I had the honour of taking the best engine Englishmen exhibited in my country—therefore don't interrupt my small speech. I shall trespass no longer on your time. How happy I shall be to say at home that England is not only a land of luxuriant crops, magnificent cattle, of well repaid labour, of paternal landlords and faithful tenants, but also the land of freedom and everlasting constitutional liberty—a land of kind reception, and of cordial hospitality. (The marquis resumed his seat amid hearty plaudits, almost every sentence of his speech having been received with immense cheering.)

The PRESIDENT next proposed the thanks of the society to the inhabitants of the town of Chelmsford and the county of Essex. That we are deeply indebted to the exertions of the local committee, no man can doubt, for all our comfort and all our enjoyment has been produced by their labour. We have the pleasure of being called together in a county where farming is seen to great perfection—we have a soil laden with crops that it rejoices the heart to look at. There were Mildmays and Westerns in times of old, and there are Bramstons and Hutleys now. Who does not know and value the chairman of the local committee, and the member for this county? Who does not know the talent of that farmer, Mr. Hutley, who teaches the agriculturists of this county by practice—hard practice, no doubt—and by giving that advice which is valuable to us all? Who does not feel the value of such a man as he is? I take a few names amongst a thousand, because they are names familiar to me and to all; and I will add if we have been all treated as the county member has treated the president, I am sure all will go back sorry the visit is so soon ended, and hoping at some future time we may be in Essex again. (The toast was drunk with cheers.)

Mr. T. W. BRAMSTON, M.P., in responding as a member of the local committee, said: He would not trespass long upon their patience, as this was a local toast; but, as an Essex man, he could not fail being proud that he was now in the town of Chelmsford. He must say that, of all the numerous meetings of the society which he had had the honour of attending, he could not recollect one that had been more distinguished in any one branch than the one which had been held in this town. There were one or two distinctive marks of this society which he could not help adverting to. They had had (if not entirely successful) one of the greatest advances towards success in the trial of what was always considered a problem of agriculture—the application of steam to the plough. They had had, too, for the first time at a meeting of this society, the pleasure of seeing foreign stock introduced amongst them; and thanks to the spirit of these foreign proprietors and these foreign breeders who had been good enough to send these specimens for exhibition. But they had one striking peculiarity, differing from anything which he had seen at any former meeting. They had had on former occasions the pleasure of receiving amongst them ambassadors and ministers from the various Courts of Europe, and they recollected how they had been charmed by hearing Mr. Webster, M. Everett, M. Drouyn de Lhuys, and M. Vanderval; they recollected how valuable they thought the presence of those gentlemen, and how glad they were to listen to remarks derived from a practical experience of agricultural matters with which they favoured them; but they had here something of that description, though totally new. They had not only foreign stock, foreign proprietors, and foreign farmers (cheers); they had not only crimsoned the field of battle and fought side by side, but here, as foreign and British farmers, they held out to one another the hand of fellowship (cheers), and communicated to each other what they knew of the various systems which were in use in different countries, and thus there was a mutual benefit conferred.

The PRESIDENT then gave "Agriculture, Manufactures, and Commerce," coupling with it "The health of the Emperor and Empress of the French."

The Rev. C. T. JAMES next rose, and said: My lords and gentlemen, I trust I am not insensible to the high honour which has been done me, in being selected to propose this toast, whose greatness and whose glory will ever be associated with its name—the "Labouring Classes." We are all deeply affected in their condition and prospect; and it is of sovereign importance to the state that these should be well affected to her polity, and obedient to her laws. But how can this be expected unless we address ourselves to the task of elevating their character, purifying their morals, and cultivating the intellects of those to whom we owe so much? And before we attempt at any time to censure the labouring classes, let us honestly ask ourselves what part we have taken in any endeavour to better their condition, lest we be as men foolish enough to expect good crops to grow in a field in which we have taken no pains either to eradicate the weeds or to improve the soil. And what is the condition of the labouring classes—alas! in some parts of our land too truly called? Labouring beyond their years, beyond their strength, beyond endurance; sapping the health, breaking the constitution, giving little time to recover from physical exhaustion, none at all for the cultivation of the mind; causing, consequently, disease and ignorance as to the living, and that short-lived generations go down to an early grave. On the other hand, there is much to cheer for future encouragement and for any past exertions. True, they have their faults, but who has not? Are not their faults attributable, in many instances, to our neglect, and not a little, perhaps, to our example. But are not their faults redeemed by many splendid virtues? Yes. They have exhibited noble qualities which fit the soldier for the battle, or nerve the martyr for the stake. They are generous and brave, kind-hearted and free, alive to all the finer feelings of the heart, living amid their various spheres of duty the blameless life of the labourer and the Christian. "Though lowly their lot, and though poor their estate," dependent as they are on health for the ability to work, and mere weekly wages for their sustenance, paint their condition as we may, their houses are often a scene of much trial, and much and enduring privation; and their conduct shines a luminous meteor, and makes their debtors all mankind. It is our privilege to know their feelings that we may sympathise with them, their wants that we may supply them, their fears that we may quiet them, their hopes that we may cheer them, their burdens that we may share them, their services that we may recompense them, their fidelity that we may acknowledge and be grateful for it; and especially are we privileged in the good example often set us in their exemplary attachment to religious duties, causing them to be renowned for their piety towards God, their integrity towards men, their affection to their church, their loyalty to their Queen, and their duty to their country—proving that often in the poorest cottage we find the "pearl of great price"—proving that if justice, kindness, and encouragement be the motto of the master, duty, gratitude, and fidelity is the conduct of the men; and that though blessed is he who remembers the poor, far more blessed is he whom the poor remember with a blessing. My lord, I think I may say, "There's a good time coming"; for England appears at last to be aroused to a sense of her privileges and duties, her difficulties and dangers. She acknowledges that no life can be pleasing unto God which is not useful unto man—that the way to improve the condition of the people is to improve the people themselves, to make them susceptible of other improvements. She appears to be aware that it is a disgrace to a christian nation that any of her sons should be compelled to live in tenements without the possibility of the proper classification of the sexes, or the conveniences for the common decencies of life. That an ignorant and uncared-for population must be a vicious, and consequently an unhappy people; that upon the judicious education of the people depends more than any other human means the destiny of our country; and that if the nation will not bestir itself for the moral and intellectual improvement of the labouring classes, she will be obliged to tax herself tenfold more for the punishment of their crimes; and she appears alive to the importance of giving to the labouring classes all those blessings of which Faith is the mother, Religion is the handmaid, and Charity the fulfilment. Then be it so. England has all that is needful to make its population comfortable in their circumstances, religious in their thoughts and feelings, moral and dutiful in their behaviour. Yes, the way is clear—the "race is glorious to run." And if these sentiments are in unison with your own, as by your plaudits I presume they are, such plaudits are but the echo of the nation's voice, which testifies that property has duties as well as rights, and that if the rich have duties to discharge, it is because the poor have rights to be protected. Be it then our determination henceforth in our intercourse with the labouring classes to testify to the dignity of labour, to exhibit our convictions that the poor have feelings as well as wants, that we desire to alleviate wretchedness without disgracing it; let us exhibit, in our lives and conduct to them, of virtue how good and pleasant are its paths, of vice how dangerous its beginning, and how destructive is its end. Let us show them that we prize the strength which lurks in the labourer's arm, and know the cost of that sweat which hangs on his furrowed brow. Let us show them by our sympathy and kindness that we do not consider them as a mere machine, to be whirled round like it, like it broken, and like it laid aside; but that it is our desire that there may be a relaxation from the never ending, still beginning, toils of human life—that our wish is, in the words of the great and good Lord Shaftesbury, to lessen their toil and increase their food, to promote all that can ensure life, and after that all that can adorn it; that we long to see and live amongst a people healthy because industrious, happy because virtuous, and contented because religious; and that amid all their occupations, weary and laborious as they are, they may have leisure to attend to those essential matters which, through the Divine blessing, can alone gild that period of their time when the sunshine of the day declines, and the evening of life verges gradually towards its close. And as the labouring classes occupy the platform of all the departments of our land, be it our desire that the agricultural interest may prosper, commercial enterprize may flourish, the arts and trade be vigorous and lasting, labour be rewarded, our people religious, happy, and contented, so that looking round upon the territories of this realm we may say—

> "Far as the breeze can bear, the billows foam,
> Survey our empire and behold our home."

[The rev. gentleman sat down amidst great applause, by which he was frequently interrupted in the course of his remarks.]

Professor Henslow replied; and

Mr. Hamond next gave "The Railway Companies, and thanks to them for their co-operation."

Mr. Waddington, M.P., returned thanks. In doing so, he said that he could tell them, from statistical returns, that the farmers of this country were turning their attention to the use of artificial manures to such an extent, that on the Eastern Counties line there had passed 23,500 tons of guano and artificial manures. It must be most gratifying to the meeting to know that, owing to the improved state of agriculture, there had been conveyed by the Eastern Counties Railway to the Port of London 721,000 qrs. of grain, 559,000 sacks of flour, 71,000 beasts, 380,000 sheep and other cattle, 13,750 tons of meat and poultry, 21,671 tons of vegetables and fruit, 88,677 barrels of beer produced from the barley, 4,330,236 quarts of milk in a purity which in London was not accomplished till the railway enabled them to know what pure milk was, and, in addition to that, 285 tons of country-made bread. He thought, with these facts before them, it was not only an evidence of what agriculture was doing in this particular locality, but that these societies were increasing the prosperity and wealth of the community, aided by increased railway communication.

Mr. Hodgetts Foley, M.P., proposed "The Stewards and Judges of the Show;" and

Mr. Grey, of Dilston, responded.

Lord Feversham gave "The Health of the President-elect." Mr. Denison had long been distinguished by his able advocacy of British agriculture, and his practical knowledge and experience in the various details of rural industry. He had lately acquired a European fame; for he was entrusted with an important mission to France on the late Exhibition, when he discharged the important duties of the situation with energy, ability, judgment, and high advantage to the cause of agricultural science, and in a manner most conducive to the advancement of those interests of which he was the very worthy representative. It must be a matter of sincere congratulation that a person so qualified had been chosen to preside over the Society for the ensuing year.

Mr. Evelyn Denison briefly replied; and the meeting broke up.

THE ANNUAL MEETING.—FRIDAY.

The business proceedings of the society were brought to a close this day by the annual meeting in the Shire Hall, at which Lord Portman presided. The meeting were congratulated on the success of the show, and the usual votes of thanks passed to the local committee, the judges, the proprietors of the land on which the show was held, and the railway directors for the assistance rendered the society. Lord Portman then presented medals from the society to the foreign commissioners who have attended the show.

M. Gareau, in acknowledging the compliment, stated that he deeply felt the importance of agricultural exhibitions. He felt that agriculture throughout the world was greatly indebted to the exertions of the Agricultural Society of England and the Highland Society—results, probably, more important than they were aware of. He had travelled through many parts of the North of Europe, and had seen those results, for he could assure them what was done in this country was most closely watched abroad. In Denmark, Holland, Hanover, and even in Sweden, their exertions had tended much for the improvement of agriculture. In his own country (France) they had not done much as yet; but they had taken the first steps at the recent Exhibition at Paris, and a show containing 2,200 implements and 200 head of cattle, he thought, was not a bad beginning. They had now taken a second step by sending French cattle across the Channel, and he trusted they would, by frequent meetings and opportunities of seeing what was done here, be enabled to make great progress in the future.

Lord Portman then presented the various foreign prizes, explaining that they would, contrary to the usual custom of the society, be accompanied by a medal, which, however, was not yet completed. On coming to M. Dutrone, the noble lord said that they were all much obliged to that gentleman for sending over his beautiful specimen of what in this country was called polled cows, or cows without horns.

M. Dutrone felt so sensibly the importance of extending that breed that he had determined to leave the prize, for the present, in the hands of the society, with the view of submitting a plan to the council, in the course of the year, for that object.

The various prizes having been briefly acknowledged, Lord Portman said they had now entered upon a new year of the society's proceedings. When they were kind enough to elect him their president at the commencement of the year they could not have anticipated so important an event as that which had taken place with regard to the introduction of foreign animals at their shows.

On the motion of Mr. Brandreth, seconded by Mr. Turner, a vote of thanks was given to Lord Portman for his continuous exertions on behalf of the society—this being the second time he has served the office of president.

Lord Portman returned thanks. He had been most gratified at what he had seen in Essex, but the society could not expect to do as much good there as they had when he was formerly president at Newcastle. In Essex they found a county well cultivated, farmers who knew how to farm, and a most harmonious feeling existing between all classes; whilst in Newcastle they found farmers who thought they knew how to farm, and that it was impossible for the society to teach them anything. The society spoke to them of the advantages to be derived from draining, but they would not listen to them. There was at Newcastle a magnificent moor, on which every man had a right to graze a cow; and the society offered to have their show upon it, if the Corporation would allow them to drain a portion, as they could not have the show upon wet ground. They demurred at first, but, with the characteristic good-nature of Englishmen, ultimately consented, though they said that they knew it would spoil the land. The next year, to their astonishment, they found this piece of land covered with cows, and eaten almost bare—the cows refusing to be scattered about as before. The Corporation thereupon thought it would be advantageous to drain the whole; they did so, and now diseases which were formerly very prevalent amongst the cows, had almost entirely disappeared. In Newcastle, as he had said, every man had a right to keep a cow on the moor, and the inhabitants kept a herdsman and a dog to look after them. In the morning it was a most beautiful sight to see 400 cows marching regularly into Newcastle, followed by the herdsman and his dog, and each, as he came near the home of his master or mistress, turning down the right wind or court, where it received a little bag of grains and was milked. The herdsman went on with the last cow, waiting until it was milked—returning and picking up his herd, with which he then returned to the moor. He had not seen that pleasing sight in Essex; but he had seen that morning what was even more pleasing him—masses of country people coming to see their show, he supposed, through the kindness of their employers, without any cost to themselves. In taking leave of them he must state that, as his successor as president, they had made a most excellent choice in the person of his friend, Mr. Evelyn Denison. He had been at school with him—had ever since enjoyed the pleasure of his acquaintance—and knew that he was warmly devoted to the interests of agriculture. He begged them in future to introduce as much young blood as possible into the council, and allow the old men to retire. He did not know how it was, but it appeared to him that the young men did not work so hard as young men did in his time. He could not say whether it was the effect of tobacco; but when he was a boy there was much less smoking and more work. (Laughter.)

A LIST OF THE IMPLEMENTS &c.,

EXHIBITED AT THE CHELMSFORD SHOW.

By Burgess and Key, of 95 (late 103), Newgate-street, London.

Two sizes of the reaping machine (which was exhibited before the Royal Agricultural Society of England last year, and for which after a prolonged trial, in which all the best machines were engaged, the first prize of £30 was awarded to Burgess and Key, the judges' report stating that "all who witnessed the trial must concur in their decision," and having been introduced in England at the Great Exhibition in 1851), invented by C. H. M'Cormick, of America, and improved and manufactured by the exhibiters; a corn and seed dressing machine, invented by Mr. Grant, of the United States, and improved and manufactured by the exhibiters; six different sizes of a force and lift pump or farm fire engine, invented by Kase, of America, and improved and manufactured by the exhibiters; a copper lift pump, improved and manufactured by the exhibiters; a galvanized iron pump, improved and manufactured by the exhibiters; six different sizes of a patent American churn (which received prizes at all the meetings of the Royal Agricultural Society since its introduction, including the last one at Carlisle, and also at the Great Exhibition, 1851), invented by C. J. Anthony, of America, and improved and manufactured by the exhibiters; three sizes of a chaff cutting machine with two knives, invented and manufactured by William Williams, of Bedford; a chaff cutting machine with two knives, invented, improved, and manufactured by Richmond and Chandler, of Salford; a chaff cutting machine with three knives, invented, improved, and manufactured by William Williams, of Bedford; a roller mill for crushing oats, malt, barley, linseed, &c., and grinding beans (which obtained the prize of £5 as the best linseed and corn crusher at the Royal Agricultural Society's meetings, at Norwich 1849, at Gloucester 1853, at Lincoln 1854, and Carlisle 1855), invented by Bond, Turner, and Hurwood, of Ipswich, and improved and manufactured by Edward R. and F. Turner, of Ipswich; two sizes of a mill for crushing oats, malt, barley, linseed, &c., and grinding beans, invented and manufactured by Edward R. and F. Turner, of Ipswich; a patent horse rake, invented by Samuel Taylor, of Cotton End, and improved and manufactured by William Williams, of Bedford; three sizes of a lawn mowing machine, invented by E. Budding, of Dursley, and improved and manufactured by L. Horrocks, of Salford; two bundles of five-tined digging forks (which have received prizes at various meetings of the Royal Agricultural Society, and also at numerous other shows throughout England), invented and manufactured by Francis Parkes, of Birmingham; a bundle of four-tined digging forks, a bundle of three-tined digging forks, a select bundle of tools, a bundle of forks (various), a bundle of tools (various), three bundles of bayforks, a bundle of pitching forks, a bundle of steel spades, a bundle of surface spades, and two complete sets of draining tools, all invented, improved, and manufactured by Francis Parkes, of Birmingham; a bundle of soil testers, manufactured by Francis Parkes, of Birmingham; two bundles of patent corrugated flexible gutta percha tubing (which obtained a silver medal at the Royal Agricultural Society's meeting at Lincoln), invented by William Burgess, of London, and manufactured by the Gutta Percha Company, of London; a bundle of gutta percha suctions, and three rolls of gutta percha tubing, manufactured by the Gutta Percha Company, of London; two rolls of canvas hose (woven without seam), samples of gutta percha driving bands (flat), and samples of India rubber driving bands; a garden engine, invented, improved, and manufactured by Tyler and Sons, of London; a parcel of jets for liquid pumps; a bundle of garden chairs, invented and manufactured by Barnard and Bishop, of Norwich; and a stable lantern, invented, improved, and manufactured by Price's Patent Candle Company, of Vauxhall.

E. and T. Humphries, of Pershore, Worcestershire.

Two sizes of a combined thrashing, shaking, riddling, barley-horning, winnowing, and sacking machine (which was exhibited at the Royal Agricultural Society's meetings held at Lincoln and Carlisle, and was specially commended, and also obtained the first prizes at the Bath and West of England Society's meetings held at Bath and Tiverton), invented, improved, and manufactured by the exhibiters; a seven-horse power patent portable steam engine, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln; and a patent riddle for combined machines, invented, improved, and manufactured by the exhibiters.

Thomas Bigg, of Leicester House, Great Dover-street, Southwark, Surrey.

Two specimens of a new and improved moveable sheep dipping apparatus on wheels (new implements), and three sizes of an improved sheep dipping apparatus, invented and manufactured by the exhibiter.

John Bennet Lawes, of Rothamsted, near St. Albans, Hertfordshire.

A small wooden building, showing the patent gutter tile spouting, invented by William Beadon, of Otterhead, Devonshire, and manufactured by the exhibiter.

John Warner and Sons, of Crescent, Jewin-street, London.

An improved irrigator, manufactured by the exhibiters; four specimens of a portable fire engine, manufactured by the exhibiters; a cast-iron double-barrelled five-inch liquid-manure or sewage pump (mounted on four wheels), a four-inch force pump or fire engine, and a fire engine, manufactured by the exhibiters; a patent portable cast-iron lift and force pump (on barrow), and a patent portable cast-iron lift and force pipe (on triangle), invented and manufactured by the exhibiters;

six specimens of an improved liquid-manure or general portable pump, with 10 feet of flexible rubber and canvas suction pipe attached, manufactured by the exhibiters; two improved liquid-manure pumps, manufactured by the exhibiters; three specimens of a 2½-inch patent cast-iron lift pump, three specimens of a 3-inch patent cast-iron lift pump, three specimens of a 3½-inch cast-iron lift pump, and three specimens of a 4-inch patent cast-iron lift pump, invented and manufactured by the exhibiters; a 2½-inch, a 3-inch, a 3½-inch, and a 4-inch patent cast-iron lift and force pump, invented and manufactured by the exhibiters; five specimens of a short-barrel patent 2½-inch cast-iron lift pump, a patent 3-inch lift pump (with iron head and brass barrel, fixed on a plank), and a patent light 2½-inch and 3-inch lift and force pump (on a plank, brass barrel, bucket, &c.), invented and manufactured by the exhibiters; sheep and clang bells (with straps, 12 sets each), a copper water wheel (4 feet in diameter, fixed in iron frame, with a set of 3-barrel 1½-inch brass force pumps), an improved cast-iron frame (with two 3½-inch brass force pumps fixed in the same, with two handles, and copper air vessel), a No. 24 cast-iron pump frame (with double crank wheel and pinion motion, and two handles, for the purpose of working a double-barrelled pump in a deep well), an improved 3-inch double-barrelled full-water-way-deep well pump (with doors to get at the valves, brass barrels, buckets, &c., with strong cast-iron top and bottom pieces, with flanges to attach pipes to), an improved galvanized iron swing garden barrow, an improved liquid-manure pump, two sizes of an improved fire or general alarm bell, a pattern board (containing a variety of patterns of cocks and gauges used principally for locomotive and other portable steam engines), and an improved water gauge or float indicator, all manufactured by the exhibiters.

George Wood and Son, of Chelmsford, Essex.

A registered clod crusher, 7 feet long and 24 inches diameter, invented by George Harriott, Esq., late of North Waltham, Hants, manufactured by Arthur Wallis, of Basingstoke; a patent turnip cutter or root grater, invented and manufactured by the exhibiters; a 22-inch winnowing machine or dressing machine, a 24-inch winnowing machine, and a 26-inch winnowing or dressing machine, improved by Thomas Bewley, of Chelmsford, manufactured by the exhibiters; a blower, manufactured by the exhibiters; a small-sized chaff cutter, invented and improved by the late Thomas Bewley, of Chelmsford, manufactured by the exhibiters; four sizes of a chaff engine, and a two-horse power, improved by Thomas Bewley, of Chelmsford, manufactured by the exhibiters; a pair of wheels, axle, and frame, for travelling, manufactured by the exhibiters; a chaff engine, invented and manufactured by A. Wallis, of Basingstoke; a hay-making machine, invented and manufactured by Smith and Ashby, of Stamford (several prizes have been awarded for this implement at the Royal Agricultural Shows); an iron horse drag rake, an oil-cake breaker, two one-horse hoes, and a broadshare or scarifier, improved and manufactured by the exhibiters; two sizes of a bean and oat mill, a smooth roller mill, and a chaff engine, improved and manufactured by Richmond and Chandler, of Manchester; a manure pump, on stand (portable), and a manure pump, to fix, improved and manufactured by the exhibiters; several specimens of length of pipe, for artesian well boring, and a cattle water trough, on wheels, manufactured by the exhibiters; a five-tined, a four-tined, and a three-tined cast steel fork, manufactured by William Hunt and Sons, of Birmingham; a wrought-iron barn shovel, an agricultural bushel or skep, and a half-bushel skep, manufactured by the exhibiters; two rolls of japanned peg lattice, manufactured by Duke and Waring, of London, and a patent turnip cutter or root grater, invented and manufactured by the exhibiters.

William Pearson and Co., of Leeds, Yorkshire.

A machine for washing, wringing, and mangling clothes, invented by William Pearson, of Leeds, and manufactured by the exhibiters; two sizes of a machine for washing, wringing, and mangling, and two sizes of a machine for wringing and mangling only, invented and manufactured by the exhibiters.

Alfred Crosskill, of Beverley, Yorkshire.

A patent clod crusher, or serrated roller, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiter (received the prize of 20*l.* and silver medal at Southampton, 10*l.* at Shrewsbury, the special gold medal from the council after the Newcastle meeting, and was included in the award of the great council medal at the Great Exhibition of 1851); (new implement) an improved patent clod crusher, or serrated roller, an improved clod crusher, and a patent clod crusher, or serrated roller, invented by William Crosskill, of Beverley, and manufactured by the exhibiter; an improved Norwegian harrow, improved by William Crosskill, of Beverley, and manufactured by the exhibiter (received the prize of 5*l.* at the Royal Agricultural Society's meeting at York, and the great medal of the Great Exhibition of 1851); a Ducie drag, or Uley cultivator, invented by Lord Ducie, improved by William Crosskill, of Beverley, and manufactured by the exhibiter (received prizes amounting to 45*l.* at various meetings of the Royal Agricultural Society); a two-horse grubber, (new implement) an improved haymaker, and an improved horse rake, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiter; an improved Bell's reaping machine, invented by the Rev. Patrick Bell, of Carmylie, Scotland, improved by William Crosskill, of Beverley, and manufactured by the exhibiter (received the awards of the 20*l.* prize of the Highland Agricultural Society in 1854 and 1855, the 20*l.* prize of the Stirling Agricultural Society, and the 15*l.* prize and silver medal of the Royal North Lancashire Society, and in 1853 received the 10*l.* prize and gold medal of the Yorkshire Agricultural Society, the 20*l.* prize of the Royal Agricultural Society of England, the 10*l.* prize of the Royal North Lancashire Agricultural Society, and the 40*l.* prize at the great trial at Stirling; (new implement) a reaping machine, invented, improved, and manufactured by the exhibiter; (new implement) a pair-horse waggon, an improved pair-horse waggon (received the prize of the Royal Agricultural Society for five successive years); a Newcastle or model one-horse cart (received the prize at the Newcastle meeting of the Royal Agricultural Society in competition with 42 others); an improved Newcastle cart, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiter; a light Newcastle cart, improved by William Crosskill, of Beverley, and manufactured by the exhibiter; a York prize cart, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiter; a light one-horse cart, improved by William Crosskill, of Beverley, and manufactured by the exhibiter; an improved one-horse cart, improved and manufactured by the exhibiter; six specimens of a pair of patent cart wheels and axles, improved by William Crosskill, of Beverley, and manufactured by the exhibiter (these wheels have received several silver medals from the Royal Agricultural Society); specimens of patent portable farm railway (received medals from the Royal Agricultural Society at the Norwich and Exeter meetings); two specimens of a truck for patent portable farm railway, and an improved iron liquid-manure cart and pump, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiter (this cart received a medal at the Cambridge meeting of the Royal Agricultural Society); an improved iron pump, a two-horse power portable thrashing machine, a corn dressing machine, and a portable corn mill, for steam or water power, improved by William Crosskill, of Beverley, and manufactured by the exhibiter; a flour dressing machine, improved and manufactured by the exhibiter; a six-horse power portable steam engine, and a three-horse power patent eccentric mill, improved by William Crosskill, of Beverley, and manufactured by the exhibiter; a six horse power bone mill, improved and manufactured by the exhibiter; (new implement) an improved bone mill, invented, improved, and manufactured by the exhibiter; a portable saw mill, a large-sized cake breaker, a small-sized cake mill, and a small-sized hand chaff cutter, all improved by William Crosskill, of Beverley, and manufactured by the exhibiter; an Archimedian root washer, invented by Captain Carr, improved by William Crosskill, of Beverley, and manufactured by the exhibiter (received a medal at the York meeting of the Royal Agricultural Society); a patent fixture pig trough, invented by W. Torr, Esq., of Aylesby, and manufactured by the exhibiter, and a small circular pig trough, manufactured by the exhibiter.

F. M'Neill and Co., of the Patent Felt Works, Bunhill-row, London.

Specimens of the patent asphalted felt, for roofing houses and every description of farm buildings; for lining damp walls, particularly of granaries, and the floors of granaries, as vermin will not touch it; as a light ceiling, to be fixed underneath rafters, as, from its non-conducting qualities, it counteracts the heat of the sun, and totally excludes the frost of winter. Her Majesty's Commissioners of Woods and Forests have now tested its character for ten years, and the whole of the camp for 20,000 soldiers at Aldershot, and her Majesty's pavilion there, are solely covered with this roofing felt; also the camp at Colchester. Models and specimen framed framings, illustrating various cheap constructions of roofs, for the application of the felt; also showing its use for ceilings, lining damp walls, covering flats, &c.

James White, of 266, High Holborn, London.

Six different sizes of an emigrant and family flour mill; three sizes of a universal steel mill; four sizes of a double oat and bean crusher, on iron frame; and five sizes of a wrought-iron portable cottage oven, all invented and manufactured by the exhibiter.

Richard Hornsby and Son, of Spittlegate, near Grantham, Lincolnshire.

Two eight-horse, one seven-horse, and one six-horse power patent portable steam engine, invented, improved, and manufactured by the exhibiters (the Council medal was awarded for this engine at the Great Exhibition in Hyde Park, in 1851; also the first prize of £20, as the best and most economical engine exhibited at the meeting of the Royal Agricultural Society of England, held at Lincoln, July, 1854; £10 at Gloucester, July, 1853; £40 at Lewes, July, 1852; £50 at Exeter, July, 1850; £50 at York, July, 1848); a nine-horse power improved horizontal fixed steam engine; three specimens of an improved patent portable combined thrashing, shaking, and dressing machine (received the first prize of £20 at the Royal Agricultural Society's meeting at Carlisle, July, 1855); two patent corn dressing or winnowing machines (the Council medal was awarded to this machine at the Great Exhibition in Hyde Park, in 1851, and it also received the first prizes from the Royal Agricultural Society of England at their meetings: £5 at Carlisle, July, 1855; £5 at Lincoln, July, 1854; £5 at Gloucester, July, 1853; £10 at Lewes, July, 1852; £10 at Exeter, July, 1850; £10 at Norwich, July, 1849; £10 at York, July, 1848; and £3 at Newcastle, July, 1846); two sizes of an improved portable corn grinding mill; a drilling machine for corn and general purposes, (this drill received the first prize of £10 from the Royal Agricultural Society of England at Lincoln, 1854; £10 at Lewes, July, 1852; £15 at Norwich, July, 1849; £15 at York, July, 1848; £15 at Newcastle-upon-Tyne, July, 1846; £15 at Shrewsbury, July, 1845; £10 at Derby, July, 1834; £30 at Bristol, July, 1842; and £25 at Liverpool, 1841); an eleven row patent corn and seed drill, on an improved principle (for this drill the exhibiters received the Council medal at the Great Exhibition in 1851; also from the Royal Agricultural Society of England the first prize of £10 at the meeting at Carlisle, July, 1855; £10 at their meeting at Lincoln, July, 1854; £10 at Gloucester, July, 1853; £10 at Lewes, July, 1852; £10 at Exeter, July, 1850; and also the prize medal for the introduction of the patent India-rubber tubes for conducting the seed to the ground, and for patented improvements in the fore-carriage steerage); an improved patent fore-carriage steerage; a ten-row patent corn and seed drill, on an improved principle, with extra side-hill motion (has received the Royal Agricultural Society's prizes for several years); a thirteen-row patent corn and seed drill, on an improved principle; a patent small occupation drill (received the Royal Agricultural Society's first prize of £5 at their meeting at Carlisle, July, 1855); a patent drill for turnips or mangel wurzel with manure (this drill received the first prize of £5 as the best exhibited at the meeting of the Royal Agricultural Society of England, held at Lincoln, July, 1854; of £10 at Lewes, July, 1852; of £10 at Exeter, July, 1850; of £10 at Norwich, July, 1849; and £10 at Shrewsbury, July, 1845); a two-row patent ridge drill for turnips and mangel wurzel with manure (this drill received the first prize of £5 at the Royal Agricultural Society's meeting at Carlisle, July, 1855; the Council medal at the Great Exhibition in 1851; the first prize of £5 at the meeting of the Royal Agricultural Society of England at Lincoln, July, 1854; of £10 at Gloucester, July, 1853; of £10 at Lewes, July, 1852; of £10 at Exeter, July, 1850; of £10 at Norwich, July, 1849; of £10 at York, July, 1848; of £10 at Shrewsbury, July, 1845; the prize medal at Derby, July, 1843; and £10 at Liverpool, July, 1841); a double cake breaking or crushing machine, all invented, improved, and manufactured by the exhibiters (this last machine received the Council medal at the Great Exhibition in Hyde Park, 1851; also the first prize of £5 at the Lewes meeting of the Royal Agricultural Society of England, July, 1852; of £5 at Shrewsbury, July, 1845; of £5 at Southampton, July, 1844; and of 5*l.* at Derby, July, 1843); and a Cornes' improved chaff cutting machine, improved and manufactured by the exhibiters.

William Day and Co., of Bow-road, London.

Two sizes of an improved land roller and clod crusher (new implement), invented by Wm. Day, and manufactured by the exhibiters.

Albert and Theodore Fry, of Bristol.

Three sizes of a press plough (new implement), invented by Robert Cozens, of Pilton, improved and manufactured by the exhibiters; three sizes of a root grater (new implement), invented by Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiters; two sizes of a Cornes' chaff machine (new implement), invented by J. Cornes, of Barbridge, improved and manufactured by the exhibiters; a chaff machine (new implement), and an improved iron watering cart, invented, improved, and manufactured by the exhibiters; a patent spring shaft agricultural cart (new implement), invented by the Rev. Frederick Glover, of London, improved and manufactured by the exhibiters; and a harvest cart, invented by J. Hannam, of Burcott Park, Oxon, improved and manufactured by the exhibiters.

Barry Brothers, of Meriton's Wharf, London.

A variety of valuable and important sheep and cattle dressing compositions, invented, improved, and manufactured by John Long, of London: Long's Specific; Long's Preservative, or lamb dressing, brought forward subsequently to the "specific"; Long's concentrated preservative; Long's foot rot, or general lotion; a number of pouring cans, suitable for sheep dressing, invented by Joseph Long, of London, and manufactured by his tinman; several specimens of skins, with the fleece, taken from Joseph Long's experimental flock.

Hare and Co., of 31, Essex-street, Strand, London.

An earthern case filter, invented and manufactured by Ransome and Co., of London; a patent American churn, invented by C. J. Anthony, of America, improved and manufactured by Burgess and Key, of London, (the Royal Agricultural Society of England have three times awarded their medal for this churn—the first at Exeter, the second at the Great Exhibition, and the third medal was awarded at the Gloucester meeting in July, 1853); a patent knife sharpener, &c., invented and manufactured by F. Stevens, of London.

S. and E. Ransome and Co., of 31, Essex-street, Strand, London.

Several sizes and specimens of a kitchen range, with hot plate, plate rack, two enamelled ovens, and a wrought-iron back boiler, invented and manufactured by G. J. Calvert, of York; a strong wrought-iron boiler, and a registered tubical apparatus, invented and manufactured by G. J. Calvert, of York; and a wrought-iron hot closet, with top plate, manufactured by G. J. Calvert of York.

Samuel Nye, of 79, Wardour-street, Soho, London.

Three sizes of an improved sausage-making and general mincing machine, and a small mincer or masticator, invented by the exhibiter and John Gilbert, of 79, Wardour-street, Soho, improved and manufactured by the exhibiter; two specimens of an improved potato germ extractor, with silver cutter, invented by the late George Napoleon Michiel, improved by H. B. Lankester, of Short-street, New-cut, Lambeth, and manufactured by Thomas Lambert and Son, of the same place; and a tunicatus, or anti-putrescent powder, for the preservation of the above germs, invented by the late George Napoleon Michiel, and manufactured by Thomas Lambert and Son, of Short-street, New-cut, Lambeth.

Richard Read, of 35, Regent-circus, Piccadilly, London.

A patent subsoil pulveriser, invented by the late John Read, of 35, Regent-circus, improved and manufactured by the exhibiter (a prize of £10 was awarded for this implement at Southampton in 1844, at Shrewsbury in 1845, at Newcastle-on-Tyne in 1846, and at Northampton in 1847); a patent double-action agricultural fire engine, complete, invented and manufactured by the exhibiter; a patent agricultural fire engine (a silver medal was awarded for this engine at Exeter, July, 1850), and a patent watering engine, invented, improved, and manufactured by the exhibiter; a patent injecting instrument for horses, cattle, &c., complete, invented by the late John Read, of 35, Regent circus, improved and manufactured by the exhibiter; three sizes of a hollow probang, for relieving hoven or choked cattle, two sizes of a patent hand watering machine, a patent double action greenhouse pump, a patent single action greenhouse pump, and a patent greenhouse syringe, invented, improved, and manufactured by the exhibiter.

BERNHARD SAMUELSON, of Banbury, Oxfordshire.

Two specimens of a patent Gardner's double action turnip cutter, invented by the late James Gardner, of Banbury, improved by Alexander Samuelson and the exhibiter, and manufactured by the exhibiter (obtained the prize medal at the Great Exhibition in 1851, and the £5 prize at the Royal Agricultural Society's show at Lewes in 1852); a patent Gardner's double action turnip cutter, for steam or horse power, invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiter; four specimens of a patent Gardner's turnip cutter, for sheep, invented by the late James Gardner, of Banbury, improved by Alexander Samuelson and the exhibiter, and manufactured by the exhibiter; a patent Gardner's turnip cutter, invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiter; a patent turnip and root pulper, invented by W. H. Gauntlett, late of Banbury, and manufactured by the exhibiter; three specimens of a turnip grater, invented by Edmund Moody, late of Maiden Bradley, improved and manufactured by the exhibiter; a patent hand root pulping and mincing machine, invented and improved by Frederick Phillips, of Brandon, and manufactured by James Woods, of Stowmarket; two specimens of a patent root grater, invented by Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiter; a lever turnip slicer, invented and manufactured by the exhibiter; four specimens and sizes, &c., of an improved Cornes' chaff cutting machine, invented by John Cornes, sen., of Barbridge, improved and manufactured by the exhibiter (many prizes of the Royal and other agricultural societies have been awarded to this implement); a rising mouth chaff cutting machine, and an economical chaff cutting machine, invented, improved, and manufactured by the exhibiter; a roller mill, for crushing malt, linseed, oats, barley, &c., improved and manufactured by the exhibiter; a malt crushing mill, invented, improved, and manufactured by the exhibiter; a universal corn crushing or bruising mill, invented by the late Mr. Stratton, of Bristol, improved and manufactured by the exhibiter; an economical corn bruising mill, and a bean splitting mill, invented, improved, and manufactured by the exhibiter; a linseed cake breaking machine, for beasts and sheep, improved and manufactured by the exhibiter; five sizes and specimens of a registered Budding's lawn mowing machine or grass cutter, invented by E. Budding, of Dursley, improved and manufactured by the exhibiter; a nine-inch lawn mowing machine, or grass cutter, invented, improved, and manufactured by the exhibiter; two sizes of a garden roller, designed and manufactured by the exhibiter; a Kase's patent double action force and suction pump, and fire engine, invented by Mr. Kase, of the United States, improved and manufactured by the exhibiter; two specimens of a galvanized sheet iron barrel pump, improved and manufactured by the exhibiter; a package of Brown's patent suspensory camp stools and chairs, invented by Messrs. Brown Brothers, of 165, Piccadilly, London, and manufactured by the exhibiter; two sizes of an Anthony's patent American churn, invented by Charles Anthony, of Pittsburg, United States, improved by Burgess and Key, of London, and manufactured by the exhibiter (it took the Royal Agricultural Society's silver medal at Exeter, a prize medal at the Great Exhibition of 1851, the prize at Gloucester in 1853, and at Carlisle in 1855); a registered atmospheric churn, invented and manufactured by the exhibiter; a rustic garden seat, designed and manufactured by the exhibiter; two bundles of Parkes' celebrated cast steel digging forks and spades, invented and manufactured by F. Parkes, of Sutton Coldfield, a portable mangle, and a letter-copying press (foolscap size), improved and manufactured by the exhibiter.

WILLIAM BUSBY, of Newton-le-Willows, near Bedale, Yorkshire.

A one or two-horse cart, invented by William Lister, Esq., of Dunsa Bank, improved and manufactured by the exhibiter (a prize of £10 was awarded to this cart at the Exeter meeting in 1850, it was also included in the award of the council medals of the Great Exhibition of 1851, and had a £10 prize at Lewes in 1852, also the silver medal at Lincoln in 1854, and the Bath and West of England Society's prize for three years in succession); two sizes of a one-horse cart, with rack and pinion, invented, improved, and manufactured by the exhibiter; a one-horse cart, invented by Mr. Rowley, of Rowthorne, improved and manufactured by the exhibiter; a two-wheeled deep plough (this plough received the prize at the Society's meeting at Northampton in 1847, £10 at York in 1848, and £7 at Lewes in 1852); five specimens of a two-wheeled plough, for general purposes, invented, improved, and manufactured by the exhibiter (this plough received the award of the council medal at the Great Exhibition of 1851, a first-class medal at the Paris Exhibition, and also six head prizes from the Royal Agricultural Society of England, in eight years); a one-wheeled plough, a swing plough, a strong five-tined horse hoe, a five-tined horse hoe, two five-tined horse hoes with revolving harrow, a horse hoe with three tines and expanding harrow, a horse hoe with three tines and revolving harrow (the Royal Agricultural Society awarded prizes to this horse hoe for five years in succession, also the Bath and West of England Society's prizes—at Taunton in 1852, at Plymouth in 1853, at Bath in 1854, and at Tiverton in 1855), a horse hoe, a light horse hoe, and a light one-horse corn hoe for three rows—all invented, improved, and manufactured by the exhibiter; and a patent implement for topping and tailing turnips, invented by William Lister, Esq., of Dunsa Bank, improved and manufactured by the exhibiter.

JOHN CORNES, of 34, Walbrook, City, London.

A rotary cultivator, grubber, or pulverizer (new implement); a stubble cart, with rake attached (new implement); a combined winnowing and seed-separating machine (new implement); two sizes of a chaffing machine, with two knives, for steam or other power; two sizes of a malt mill; several sizes and specimens of a patent churn (new design); three sizes of a patent washing machine; two sizes of a patent washing machine, combined so as to wring and mangle; two sizes of a table mangle; and two sizes of a patent pillar mangle, all invented and manufactured by the exhibiter; a model of rick yard (new design), invented by the exhibiter; a stand of models, and a quantity of roof felting.

JAMES HAYES, of Elton, near Oundle, Huntingdonshire.

A patent portable straw elevator (new implement), invented and manufactured by the exhibiter; four sizes of a grinding mill, and two sizes of a flour dressing machine, invented, improved, and manufactured by the exhibiter.

ISAAC JAMES, of Cheltenham, Gloucestershire.

Two sizes of a patent liquid manure distributor or water cart (new implement, awarded a prize of £10 at the Tiverton show, 1855, and £1 at the Stow-on-the-Wold show, 1855), invented and manufactured by the exhibiter; an improved strong light two-horse waggon, for agricultural or road purposes (new implement), improved and manufactured by the exhibiter; and an improved liquid manure and general portable pump (new implement), manufactured by Warner and Son, of London.

ARTHUR LYON, of 32, Windmill-street, Finsbury, London.

Two sizes of a pulping machine, and a machine for cutting carrots and other vegetables, invented, improved, and manufactured by the exhibiter; a machine for cramming turkeys and other poultry, invented and improved by the exhibiter; four sizes of a machine for cutting or mincing meat or vegetables, invented, improved, and manufactured by the exhibiter.

Robert Maynard, of Whittlesford, Cambridgeshire.

A patent combined thrashing and separating machine, and a patent portable steam and horse-power chaff engine, invented and manufactured by the exhibiter; a seven-horse power patent portable steam engine (obtained prizes at the Great Exhibition 1851, at Lincoln 1854, Gloucester 1853, Lewes 1852, Exeter 1850, and York 1848), invented, improved, and manufactured by Richard Hornsby and Son, of Spittlegate Iron Works; a patent portable horse-power chaff engine, invented and manufactured by the exhibiter; a seven-horse power patent portable steam engine, invented, improved, and manufactured by Richard Hornsby and Son, of Spittlegate Iron Works; an universal oilcake crusher, an oilcake crusher, and a weighing machine, invented and manufactured by the exhibiter; a weighing machine, manufactured by the exhibiter; a horserake, invented, improved, and manufactured by the exhibiter; and a small barrow bean or pea drill, invented and manufactured by the exhibiter.

T. F. Griffiths and Co., of Bradford-street, Birmingham.

A patent cheese-making apparatus, for the more readily and effectually separating the whey from the curd (new implement), invented byRichard Keevil, of Laycock, near Chippenham, and manufactured by the exhibiter.

William Sawney, of Beverley, Yorkshire.

A winnowing machine, with an entirely new cliver apparatus attached (new implement), invented and manufactured by the exhibiter; a winnowing machine, with moveable screen, improved and manufactured by the exhibiter; a winnowing machine, manufactured by the exhibiter; a blowing machine, with a cliver apparatus attached (new implement), and a blowing machine and cliver apparatus combined, invented and manufactured by the exhibiter; and a blowing machine, manufactured by the exhibiter.

Thomas Scragg, of Calverley, near Tarporley, Cheshire.

Two sizes of a single action tile machine (to which the prize of £5 was awarded at Lincoln), invented, improved, and manufactured by the exhibiter; and a brick press, invented and manufactured by the exhibiter.

Tuxford and Sons, of Boston and Skirbeck Iron Works, Lincolnshire.

A four-horse power patent portable steam engine, with vertical cylinder, safety spark trap to chimney, an iron house for enclosing the engine, and an improved boiler with flues and tubes combined (which at the Carlisle meeting of the Royal Agricultural Society took the first prize), invented by Weston Tuxford, of Boston, and manufactured by the exhibiters; a five-horse power patent portable steam engine, a six-horse power patent portable steam engine, a seven-horse power patent portable steam engine, and an eight-horse power patent portable steam engine, with vertical cylinder, boiler, and an iron house for enclosing the engine; a four-horse power fixed steam engine, with oscillating cylinder, a six-horse power fixed steam engine, with vertical cylinder, and an eight-horse power fixed steam engine, with vertical cylinder; a patent combined thrashing, straw shaking, riddling, winnowing, chaff separating, and barley awning machine, with elevations to sack the grain at a height convenient for a man to back without help; a patent combined thrashing, straw-shaking, riddling, winnowing, chaff-separating, and barley awning machine, with extra dressing apparatus; a circular saw table, with parallel fence plate and binding rollers, rails and horses, drag motion and drawing pulley, and a circularsaw table—all invented by Weston Tuxford, of Boston, and manufactured by the exhibiters.

John Whitmee and Co., of 18, Fenchurch-buildings, Fenchurch-street, City, and 11, Ray-street, Clerkenwell, London.

Four sizes of a corn crusher; a grinding mill, with steel barrel; a grinding mill; a steel mill for grinding wheaten flour; two sizes of a flour mill, and three sizes of a corn mill, all invented, improved, and manufactured by the exhibiters.

Williamson Brothers, Canal Ironworks, Kendal, Westmoreland.

A three horse power turbine, or horizontal water wheel (new implement); a five horse power direct-acting fixed steam engine; an improved one horse gear work; a registered washing, wringing, and mangling machine; and a registered portable mangle, all invented, improved, and manufactured by the exhibiters; a chaff cutter, improved and manufactured by the exhibiters; an oilcake mill, and a two horse power thrashing machine, both invented, improved, and manufactured by the exhibiters.

Henry Clayton, Atlas Works, Upper Park-place, Dorset-square, London.

A patent combined "clay preparing and brick making machine" (new implement), invented and manufactured by the exhibiter (received the gold medal of honour at the Paris Exposition, 1855, and the gold medal of the Great Exhibition at Amsterdam); a patent brick pressing machine, and a patent paving tile (or quarry) pressing machine, invented and manufactured by the exhibiter; a patent double action pipe, tile, and tubular brick machine, invented, improved, and manufactured by the exhibiter (this machine was awarded the prize of £20 by the Royal Agricultural Society of England, at the Exeter show meeting; the gold medal prizes by the King of Sardinia at Turin, and at the Paris Exhibition; the prize medal of the Great Exhibition, of London; in addition to thirteen prizes by influential agricultural societies throughout the United Kingdom); patent clay screening or cleansing plates, a patent colossal "vertical action" sanitary or sewage pipe and tile machine (new implement), and patent chambered pipe dies and apparatus (new implement), invented and manufactured by the exhibiter; a bichambered double action horizontal tile, pipe, and brick machine, improved and manufactured by the exhibiter (to this machine was awarded a gold medal and special prize diploma by his Majesty the King of Hanover); a single chamber horizontal tile, pipe, and brick machine, improved and manufactured by the exhibiter; a patent "rotary" die for the manufacture of bricks by machines (new implement), invented and manufactured by the exhibiter; an iron pugging mill, for preparing clay for brick, tile, or pipe making, improved and manufactured by the exhibiter; "cycloidal form" cast-steel blade draining tools (for the invention of which cycloidal shape of tools the Royal Agricultural Society of England awarded to the exhibiter their prize at the Northampton meeting, and he has received numerous prizes throughout the kingdom); and "spear-shape and tri-faced" cast-steel blade draining tools, invented and improved by the exhibiter, manufactured by Parkes, of Sutton; and a patent "drain consolidator and chaser," invented and manufactured by the exhibiter.

James Dunlop, of Haddington.

A bridle for cart or farm harness, and a neck collar for cart or farm harness, improved and manufactured by the exhibiter; a patent self adjusting saddle for cart or farm harness (new implement), invented, improved, and manufactured by the exhibiter; a breeching for cart or farm harness, a shaft belly band for cart or farm harness, a set of hames for cart or farm harness, and a bridle for cart or farm harness, improved and manufactured by the exhibiter; a neck collar for cart or farm harness, invented, improved, and manufactured by the exhibiter; a back band for leading horse in cart or waggon, a belly band for leading horse in cart or waggon, a set of trace chains for leading horse in cart or waggon, a back band for plough harness, a bridle for cart or farm harness; a nosebag for feeding horses; and a stall collar, improved and manufactured by the exhibiter; a neck collar for carriage or gig horse (new implement), and a model of a self adjusting saddle, invented, improved, and manufactured by the exhibiter; a model of a saddle with boards fixed to the crib, manufactured by the exhibiter; and a model frame of an expanding neck collar, invented, improved, and manufactured by the exhibiter.

J. Marychurch and Son, of Haverfordwest, Pembrokeshire.

An improved Scotch winnowing machine, with elevator, improved by J. Belfield, of Paignton, Devonshire, and manufactured by the exhibiters (this machine received the prize of the Bath and West of England Society's show last year, at Tiverton); a patent self-acting horse rake (new implement), invented and manufactured by the exhibiters; an iron horse hoe, manufactured by the exhibiters; and a patent two-wheel carriage shoe (new implement), invented and manufactured by the exhibiters.

Thomas Standing, of Lime-street, Fishergate, near Preston, Lancashire.

A model of an improved poultry house or aviary, with pigeon house combined (new design); a roll of galvanized wire fencing; seventeen rolls of different specimens of wire fencing; and a sample card of staples, all invented, improved, and manufactured by the exhibiter.

Caldow and McKinnel, of Palmerstone Iron Works, near Dumfries.

Two sizes of a patent cart turnip cutting machine, and a turnip sowing machine, manufactured by the exhibiters.

Ransomes and Sims, of Ipswich, Suffolk.

A patent iron plough, invented, improved, and manufactured by the exhibiters (awarded the prize at the meeting of the Royal Agricultural Society at Lewes in 1852, at Lincoln in 1854, and again at Carlisle in 1855, as the best plough for general purposes); (new implement) a patent trussed beam iron general purpose plough, and two sizes of a light solid beam iron plough, invented, improved, and manufactured by the exhibiters; a light solid beam iron plough without wheels, improved and manufactured by the exhibiters; a patent iron plough, and two sizes of a strong solid beam wrought iron plough for deep ploughing, invented, improved, and manufactured by the exhibiters (awarded the prize at the Carlisle meeting of the Royal Agricultural Society in 1855); a patent trussed beam iron plough with two wheels and skim coulter (awarded the prize of £10 and silver medal as the best heavy land plough, and a prize of £10 and silver medal as the best light land plough, at the Royal Agricultural Society's meeting at Southampton, also a prize of £10 at the Royal Agricultural Society's meeting at Northampton, and the council medal of the Great Exhibition being awarded to it, as made by Busby), an iron solid beam general purpose plough, a patent trussed beam iron plough with two wheels, two sizes of an iron plough with solid beam, a strong wrought-iron patent trussed beam plough, three sizes of a patent iron trussed beam plough, a light East Indian plough with wood beam and handles, and a strong plough with wood beam and handles, head wheel and cast breast, invented, improved, and manufactured by the exhibiters; a patent trussed beam iron plough, invented by John Clark, of Long Sutton, Lincolnshire, improved and manufactured by the exhibiters (obtained the silver medal at the meeting of the Royal Agricultural Society at Norwich in 1849); two specimens of a patent trussed beam iron one-way or turn-wrest plough, invented by Henry Lowcock, improved and manufactured by the exhibiters (awarded the silver medal at the Royal Agricultural Society's meeting at Southampton in 1844, prize of £5 at Shrewsbury in 1845, £5 at Exeter in 1850, £7 at Lewes in 1852, and £7 at Gloucester in 1853); a trussed beam iron plough fitted with curved cutters, a trussed beam iron double tom or bouting plough, a double furrow plough, and a wrought-iron plough, all invented, improved, and manufactured by the exhibiters; two sizes of a Beauclerc's patent trussed beam iron Archimedian subsoil plough with wheels, invented by Lord C. Beauclerc, improved and manufactured by the exhibiters; two sizes of a Smith's patent wrought-iron subsoil plough, invented by W. Smith, of Little Woolstone, improved and manufactured by the exhibiters; two specimens of a Cotgreave's patent trenching and subsoil plough, invented by R. Cotgreave, improved and manufactured by the exhibiters (awarded the silver medal at Lincoln in 1854, and at Carlisle in 1855); two sets of patent trussed whippletrees, invented, improved, and manufactured by the exhibiters (awarded a silver medal at the meeting of the Royal Agricultural Society at Southampton, and commended at the Society's meeting at Lewes); a patent wrought-iron scarifier, grubber, or cultivator, invented by Arthur Biddell, of Blayford, improved and manufactured by the exhibiters (awarded the Royal Agricultural Society's prize at Liverpool 1841, at Northampton 1847, at York 1848, at Norwich 1849, at Lewes 1852 and at Gloucester 1853); (new implements) two specimens of an improved wrought-iron scarifier, grubber, or cultivator, two specimens of an improved Scotch grubber with wheels, (new implements) two specimens of a horse hoe for ridge work, and a two-horse scarifier, invented, improved, and manufactured by the exhibiters; a patent self-cleaning harrow, invented by Finlayson, improved and manufactured by the exhibiters; two specimens of a set of four heavy iron East Anglian harrows, two specimens of a set of four 3-beam medium size East Anglian harrows, two specimens of a set of three 4-beam light East Anglian seed harrows, and three specimens of an improved iron Suffolk horse drag rake, invented, improved, and manufactured by the exhibiters; two sizes of a patent clod-crushing roller, invented by W. Crosskill, improved and manufactured by the exhibiters; two sizes of a three-cylinder iron field roller, a three-cylinder iron barley roller, an improved wrought-iron corn rick stand, two specimens of a chaff cutter for horse or steam power, and two specimens of a chaff cutter for hand or horse power, invented, improved, and manufactured by the exhibiters; a patent cam chaff engine, invented by G. A. Biddell, of Ipswich, improved and manufactured by the exhibiters; three sizes of a chaff cutter, invented, improved, and manufactured by the exhibiters; a double action turnip cutter, and two specimens of a single action turnip cutter, invented by J. Gardner, of Banbury, improved and manufactured by the exhibiters; an improved patent root grater, invented by Bushe and Barter, of Lismore, improved and manufactured by the exhibiters; a bruising mill for hand, horse, or steam power, and a smaller bruising mill, invented, improved, and manufactured by the exhibiters; two specimens of a patent universal mill, five specimens and sizes of a patent bean cutter for hand power on iron stand (awarded the silver medal of the Royal Agricultural Society at Gloucester, also the silver medal of the Yorkshire Agricultural Society at York in 1853, and a second class medal at the meeting of the Royal Agricultural Improvement Society of Ireland at Killarney in 1853), two sizes of a patent steel oat mill, and two sizes of a patent combined oat and bean mill, invented by G. A. Biddell, of Ipswich, improved and manufactured by the exhibiters; a hand power malt mill, invented, improved, and manufactured by the exhibiters; two specimens of a patent grinding mill, invented by George Hurwood, of Ipswich, improved and manufactured by the exhibiters; four sizes of an oilcake breaker, a portable corn mill with flour dressing apparatus, a portable corn mill with 3 feet stones, a circular saw bench, a rack hay press, a set of pig troughs from 1 to 5 feet, a set of hog troughs from 2 to 6 feet, and two sizes of a circular pig trough, invented, improved, and manufactured by the exhibiters; three sizes of a grass cutting machine, invented by Budding, of Dursley, improved and manufactured by the exhibiters; a set of stable fittings, invented by James Bruce of Gwyrch Castle, Ireland, improved and manufactured by the exhibiters; an improved wrought-iron carriage lifting jack, an improved Bristol cart, an improved Windsor cart, an improved Scotch cart, two sizes of a five horse power portable steam engine, three sizes of a seven horse power portable steam engine, two specimens of a ten horse power portable steam engine, two specimens of an improved four horse power fixed steam engine, an improved horizontal direct action eight horse power fixed steam engine (received at the Royal Agricultural Society's meeting at Lewes in 1852 the prize of £10, was commended at Gloucester 1853, received the first prize at Lincoln 1854, and at Carlisle 1855 again obtained the first prize), an improved winnowing machine, an improved barley awner, two specimens of a portable combined steam thrashing machine, a patent portable steam thrashing machine (awarded the prize of £10 at the Carlisle meeting of the Royal Agricultural Society in 1855), a patent stationary combined steam thrashing machine, a four horse portable thrashing machine (awarded the prize of the Royal Agricultural Society at Gloucester in 1853), a three horse portable thrashing machine, a portable thrashing machine, a two horse portable thrashing machine (awarded the prize at the Royal Agricultural Society's meeting at Gloucester in 1853 as the best two horse thrashing machine, at the Royal Agricultural Improvement Society's meeting at Killarney in 1853, at the Armagh meeting of the same society in 1854, and again at Carlow in 1855 the first prize being awarded to this machine), a horse work for one or two horses with intermediate motion, and an iron universal intermediate motion, all invented, improved, and manufactured by the exhibiters; and a steerage horse hoe with double bar, invented by John Green, of Saffron Walden, Essex, and improved and manufactured by the exhibiters.

George Pye, of the Grey Friars Works, Ipswich, Suffolk.

Patent feeding cake and meal for stock, and the fibres of the flax plant (patented), invented and manufactured by John Watson Burton, of Eye, Suffolk, and the exhibiter.

SMITH and ASHBY, of Stamford, Lincolnshire.

Two specimens of a patent improved double-action and reverse-motion hay-making machine. The following is a list of some of the principal prizes taken by this machine: A first prize of £5 at the Newcastle meeting of the Royal Agricultural Society of England, 1846; first prize of £5 5s. at the Great Yorkshire meeting, 1846; a first prize of £5 5s. at the Derbyshire meeting, 1846; first prize of £5 at the Great Yorkshire meeting, 1847; the Royal Society of England's medal at York, 1848; first prize of £3 3s. at the Great Yorkshire meeting, 1849; a first prize of £5 from the Royal Agricultural Society of England, at Norwich, 1849; a first prize again from the Royal Society of England for the best haymaker, at Exeter, 1850; a first prize of the North Lincolnshire Society, 1850; a first prize of the Royal North Lincolnshire Society, 1850; a first prize from the Great Yorkshire meeting, 1850; the prize medal of the Great Exhibition of All Nations, in London, 1851; first prize of the Bath and West of England Society, at Taunton, 1852; the high commendation of the judges of the Royal Society of England, at Lewes, 1852 (no prize offered that year); the first prize of the Bath and West of England Society, at Plymouth, 1853; the first prize of the North Lancashire meeting, at Blackburn, 1853; the prize medal of the Royal Society of England, at Gloucester, 1853 (no prize offered); the first prize of the Bath and West of England Society, at Bath, 1854; high commendation of judges of Royal Society of England, at Lincoln, 1854 (no prize offered); the first prize of the Highland Agricultural Society, at Berwick, 1854; the high commendation of the judges of the Royal Society of England, at Carlisle, 1855 (no prize offered); the first prize of the Bath and West of England Society, at Tiverton, 1855; a first prize of £5 from the Royal Agricultural Improvement Society of Ireland, at Carlow, 1855; the first prize of the Boston show, 1855; and a first-class prize medal at the Paris Exhibition, 1855). Three specimens of a patent steel-tooth horse-rake, for hay, corn, stubble, couch grass, &c. This rake was tested before the judges of the Royal Irish Society, at Carlow, 1855, against all the best horse rakes in kingdom, and carried off the head prize. The prize medal of the Great Exhibition of All Nations, in London, 1851, was also awarded to this rake, and it received also the honorary certificate of the Royal Dublin Society at the Great Spring Cattle Show, 1855. A first-class prize was awarded to this horse rake at the Great Agricultural meeting at Adelaide, in Australia, 1855; besides which it has taken nearly twenty prizes from various royal and other societies of Scotland, Ireland, and England). A patent lever wheel hand rake, an Exhibition prize 13-inch patent safety chaff cutter, a patent safety two-knife chaff cutter, two specimens of a ten-inch patent safety two-knife chaff cutter, an 8½-inch patent two-knife chaff cutter, an improved horse power gear works, an improved registered double action oilcake mill, a patent park or luggage cart, and an improved prize one-horse general purpose cart—all invented, improved, and manufactured by the exhibiters (this last cart took the head prize of £5 at the Royal Society of Ireland, at Carlow last year).

HUMPHREY CHAMBERLAIN, of Kempsey, near Worcester.

A patent brick-making machine (received a silver medal at the Liverpool and Manchester Agricultural Society's meeting at St. Helen's, Sept. 6, a prize of £4 at the Warwickshire Agricultural Society's show at Coleshill, Sept. 12, a silver medal at the Staffordshire Agricultural Society's show at Leek, Sept. 27, and a prize of £2 at the Worcester Agricultural Society's meeting, Oct. 5, 1855), invented by the exhibiter, manufactured by John Jackson, of Worcester; and a six-horse power portable steam engine, invented by Joseph Simpson, of Openshaw, manufactured by Simpson and Barnes, of Openshaw, near Manchester.

WILLIAM COULSON, of 36, Fetter-Lane, York.

A patent combined boring, mortising, tenoning and drilling machine (a silver medal was awarded to this machine at the Carlisle meeting, 1855), and a machine for mortising, &c., invented, improved, and manufactured by the exhibiter.

WILLIAM LANGFORD FISHER, of Thrapstone, Northamptonshire.

A patent clod crushing roller, a patent field roll, two specimens of a patent horse rake, three sizes of a chaff cutting machine, a combined bean and cake mill, two sizes of an oil-cake breaker, an oat, linseed, and malt crusher, and a one-horse power, all invented and improved by Nathaniel Smith, of Thrapstone, manufactured by the exhibiter.

HENRY GODDARD, of Nottingham.

A cottage range, invented and manufactured by the exhibiter; a patent prize economical cooking apparatus, two specimens of a patent prize (1851) Great Exhibition economical cooking apparatus, and a patent open fire kitchen range or cooking apparatus, invented, improved, and manufactured by the exhibiter.

JOSEPH GRIPPER, of Colchester, Essex.

A strong sheep folding hurdle, on wheels, and a strong wrought iron trough, on wheels, for water or food for cattle or sheep, improved and manufactured by the exhibiter; a two-knife hand power chaff cutter, and three sizes of a wood drag rake, with iron teeth, manufactured by the exhibiter; an iron toothed stubble or twitch rake, invented and manufactured by the exhibiter; a wrought iron carriage jack, improved and manufactured by the exhibiter; a wrought iron sack barrow, and a wood sack barrow, manufactured by the exhibiter; several sizes of a wrought iron skep for domestic use, several sizes of a galvanized iron skep, and a wrought iron japanned basket for house or garden use, improved and manufactured by the exhibiter; a wrought iron japanned basket, and a galvanized wrought iron basket for stable purposes, improved and manufactured by the exhibiter; four sizes of an iron barn shovel manufactured by the exhibiter; two sizes of an iron malt shovel, invented and manufactured by the exhibiter; three sizes of a strong japanned wrought iron water pail, and three sizes of a strong galvanized iron water pail, manufactured by the exhibiter.

ROBERT LANE, of Cirencester, Gloucestershire.

A registered oilcake breaking machine (new implement), invented and manufactured by the exhibiter; a registered machine for breaking oilcake (new implement), invented, improved, and manufactured by the exhibiter; four sizes of a chaff cutter, improved and manufactured by the exhibiter; a Gardner's patent turnip cutter (single action), invented by Gardner, of Banbury, improved by the exhibiter, and manufactured by Thomas Lane, of Cirencester; a Moody's patent root grater, invented by Mr. Moody, and manufactured by Wood, of Stowmarket; a horse hoe for root crops, improved and manufactured by the exhibiter; an expanding hoe for root crops, invented and manufactured by the exhibiter; a number of gentlemen's paddles, improved and manufactured by the exhibiter; a Warwickshire drag rake, manufactured by Mr. Daft, of Teeswater; a one horse general purpose Cotswold cart, improved and manufactured by the exhibiter.

ROBEY AND SCOTT, of Lincoln.

A seven horse power patent portable steam engine, and a combined portable thrashing, straw shaking, riddling, winnowing, chaff-separating, and barley-awning machine, invented, improved, and manufactured by the exhibiters.

CLAYTON, SHUTTLEWORTH, AND CO., of Lincoln.

A six horse power patent portable steam engine (received the prize of £20 at the Royal Agricultural Society's meeting at Gloucester, 1853, also £10 at Carlisle, 1855); a six horse power outside-cylinder portable steam engine (received a prize of £25 at the Royal Agricultural Society's meeting at Norwich, 1849, £25 at Exeter, 1850, and a prize medal at the Great Exhibition, 1851); a seven horse power patent portable steam engine; a seven horse power outside-cylinder portable steam engine; an eight horse power patent portable steam engine; an eight horse power outside-cylinder portable steam engine; an eight horse power fixed steam engine (received the first prize of £20 at the Royal Agricultural Society's meeting at Gloucester, 1853); a ten horse power fixed steam engine; a set of fixed barn works (a silver medal and £10 being awarded to this piece of machinery at the Royal Agricultural Society's meeting at Lewes, 1852, a silver medal at Gloucester, 1853, £20 at Lincoln, 1854, and £20 at Carlisle, 1855); two specimens of a combined portable thrashing, straw shaking, riddling, winnowing, chaff separating, and barley awning machine (received a prize of £20 at the Royal Agricultural Society's meeting at Lewes, 1852, also £20 at Lincoln, 1854); another specimen of a combined portable thrashing, straw shaking, riddling, winnowing, chaff separating, and barley awning machine (received a silver medal at the Royal Agricultural Society's meeting at Carlisle, 1855); a pair of portable Derbyshire mill stones, driven by steam power (received the prize of £10 at the Royal Agricultural Society's meeting at Norwich, 1849, £10 at Exeter, 1850, £10 at Gloucester, 1853, £5 at Lincoln, 1854, and £5 at Carlisle, 1855); and a portable circular saw bench—all invented, improved, and manufactured by the exhibitors.

Richmond and Chandler, of Salford, Manchester, and of South John-street, Liverpool.

An economic chaff cutting machine, a prize chaff cutting machine (awarded the prize at the Society's meeting at Carlisle, 1855), four sizes of a chaff cutting machine, two sizes of an improved corn crusher, a grain and linseed crusher, an improved excise malt mill, an improved corn crusher, an improved grain and linseed crusher, an improved root washing machine, and an improved steaming apparatus, all invented, improved, and manufactured by the exhibiters; a patent sack holder, and a patent sack holder with wheels, both invented by Henry Gilbert, of London, improved by Joshua Cooch, of Harleston, and manufactured by the exhibiters.

Robert Roger, of Stockton-on-Tees, Durham.

A steam ploughing machine (new implement), invented by Messrs. Fiskens, of Stamfordham, and improved and manufactured by the exhibiter; an improved universal cultivator (new implement), and two sizes of a horse plough, invented and manufactured by the exhibiter; a seven-horse power agricultural portable engine, and a straw cutter for two-horse power, improved and manufactured by the exhibiter; a stench trap, invented and manufactured by the exhibiter; a liquid-manure tap, invented by J. Lambert, of Stockton-on-Tees, and manufactured by the exhibiter; a gate heel, invented by the late Robert Rayson, of Stockton-on-Tees, and manufactured by the exhibiter; a corn stack pillar, and a specimen of garden bordering, manufactured by the exhibiter.

Barrett, Exall, and Andrewes, of Reading, Berks.

A four horse portable steam engine, a six horse portable steam engine (obtained the prize medal of the Great Exhibition of all Nations 1851, and the prize of the Royal Agricultural Society at the Lewes meeting in 1852), a ten horse power portable steam engine, an eight horse power horizontal fixed steam engine (received the prize of £10 at the Carlisle meeting of the Royal Agricultural Society of England), a steam power combined thrashing machine, an improved complete steam power combined thrashing machine, a three horse power patent thrashing machine and patent safety horse gear, a two horse portable patent thrashing machine, a six horse patent safety horse gear (had awarded the prizes of the Royal Dublin Society, the Royal Improvement Society of Ireland, the Great Yorkshire Society, the commendations of the Royal Agricultural Society of England, and the prize medal of the Great Exhibition in 1851, besides other societies), a patent hand power thrashing machine, a corn cleaner or blower with feed roller for chaffing, a barley aveller, an oilcake breaker for hand power, an oilcake breaker for horse or steam power, a grain crushing mill (for oats, beans, malt, &c.), a grain crushing mill for man or horse power, a pair of peak stones for grinding corn by horse or steam power, three sizes of a patent safety chaff cutter for hand power, two sizes of a patent safety chaff cutter (with registered feed rollers) for horse power, and a patent safety chaff cutter for steam or water power, all invented, improved, and manufactured by the exhibiters; a chaff cutting machine for hand or horse power, and a chaff cutting machine for steam or horse power, invented by John Cornes, of Barbridge, and improved and manufactured by the exhibiters; a gorse bruising machine for horse or steam power (which obtained the prize of the Royal Agricultural Society of England at their meeting held at York, and also at Norwich and at Lewes, the Royal Dublin Society awarding their prize, in April last, to the same machine), a one wheel plough, and a two wheel and swing iron plough, invented, improved, and manufactured by the exhibiters; a patent subsoil plough and pulverizer (the Royal Agricultural Society awarding their prize to this plough at the following meetings—Southampton, Shrewsbury, Newcastle, Northampton, and York), invented by Mr. Read, of London, and improved and manufactured by the exhibiters; two sizes of an universal wheel roller clod crusher, and a registered hay making machine (which obtained the prize of the Royal Agricultural Improvement Society of Ireland at the Dublin meeting in 1851, and various others), invented, improved, and manufactured by the exhibiters; a patent horse rake, for hay, &c. (which had awarded to it, in 1852, the prize of the Great Yorkshire Society at Sheffield, in competition with a great number, also a first-class medal of the Royal Agricultural Improvement Society of Ireland at Galway), manufactured by the exhibiters; a grass and seed broadcast sowing machine, a one horse cart with harvest frame, and a one horse cart without harvest frame, invented, improved, and manufactured by the exhibiters; and two specimens of a patent endless band saw, invented by W. Exall, of Reading, and improved and manufactured by the exhibiters.

Robert Boby, of Bury St. Edmund's, Suffolk.

A patent corn dressing machine, an improved patent corn screen, and a small patent corn screen, invented by T. C. Bridgeman, of Bury St. Edmund's, and improved and manufactured by the exhibiter; and a wrought iron barley roller, manufactured by the exhibiter.

John Eaton, of Twywell Works, near Kettering, Northamptonshire.

A one horse cart (a prize of £5 awarded to this description of cart at the Royal Agricultural Society's meeting held at York, 1848), invented and manufactured by the exhibiter; a registered sheep crib, a hand power lifting jack, and an engine jack, improved and manufactured by the exhibiter; a corn dressing machine and a hand seed dibble (new implements), invented and manufactured by the exhibiter.

James Beadel, of Broomfield Lodge, near Chelmsford, Essex.

A portable covered homestall, invented by the exhibiter, and manufactured by Ralph Elgie, of Broomfield.

William Brown and Charles N. May, of Devizes, Wiltshire.

A six horse portable steam engine, a portable combined thrashing and winnowing machine, a hand chaff cutter, and a horse or hand power chaff cutter, all improved and manufactured by the exhibiters.

Charles Burrell, of Thetford, Norfolk.

A nine horse power portable steam engine, an eight horse power portable steam engine, a seven horse power portable steam engine, a six horse power portable steam engine, a patent combined thrashing, shaking, riddling, and winnowing machine, for finishing the corn for market (in 1848, at the meeting of the Royal Agricultural Society at York, a silver medal being awarded), a patent combined thrashing, shaking, riddling, and winnowing machine, with barley awner, and elevators for sacking the corn, a thrashing, shaking, and riddling machine, and a gorse or furze cutter and bruiser, or universal corn and seed crusher (obtained a prize medal at the Great Exhibition of 1851), all invented, improved, and manufactured by the exhibiter; a patent seed shelling machine (obtained a prize medal at the Society's meeting at Southampton in 1841), invented by Kebble Constable, of Cambridge, and improved and manufactured by the exhibiter; a strong portable saw bench, a portable circular saw bench and machine for making hurdles or gates (at the Royal Agricultural Society's meeting at Norwich in 1849 a silver medal being awarded to it), a two horse power machine, invented, improved, and manufactured by the exhibiter; and a working model of a patent continuous furnace for drying and burning bricks, tiles, drain pipes, porcelain, and other ceramic substances, by which a great saving in fuel is effected, as the cost of burning bricks is only 1s. per 1000 when coals are £1 per ton, and the whole operation is carried on under a building, independent of the weather, all the year round.

William C. Cambridge, of Templegate, Bristol.

A sixteen horse power portable steam engine with double cylinders, an eight horse power portable steam engine, a combined thrashing, shaking, riddling, winnowing, and elevating machine, and nine sizes of a patent roller or clod crusher, all invented, improved, and manufactured by the exhibiter; and an improved combined winnowing and dressing machine (new implement), invented, improved, and manufactured by Robert Impey, of Street.

James Cornes, of Barbridge, near Nantwich, Cheshire.

A registered chaff cutting machine, with three knives, invented by John Cornes, sen., of Barbridge, improved and manufactured by the exhibiter (gained a prize of 10*l.* at the Royal Agricultural Society's meeting at Shrewsbury in 1845, at Newcastle-upon-Tyne in 1846, at Northampton in 1847, the Society's silver medal at York in 1848, a prize of 10*l.* at Norwich in 1849, 10*l.* at Exeter in 1850, the prize medal of the Great Exhibition in 1851, a prize of 10*l.* at Gloucester in 1853, a prize of 5*l.* at Lincoln in 1854, and a prize of 5*l.* at Carlisle in 1855); six other specimens and sizes of this machine, a chaff cutting machine with two knives, a one-horse cart for general purposes, a dressing machine, and a curd mill, invented, improved, and manufactured by the exhibiter.

Matthew Gibson (late Matthew Gibson and Son), of Newcastle-upon-Tyne.

A revolving cultivator or grubber, for cleaning, aërating, and pulverizing the soil, invented by Robert Hall, of Prudhoe, Northumberland, improved and manufactured by the exhibiter; (new implement) a revolving surface cultivator, for stirring and pulverizing the soil, invented and manufactured by the exhibiter; a revolving subsoil stirrer, for stirring the subsoil without bringing it to the surface, invented by Robert Hall, of Prudhoe, Northumberland, improved and manufactured by the exhibiter; a two-horse cultivator or grubber, and a three-horse cultivator or grubber, invented and manufactured by the exhibiter; two specimens of an improved Northumberland clod crusher (patent), invented, improved, and manufactured by the exhibiter (to this implement were awarded a prize medal at the Exhibition of Industry of All Nations at London in 1851), and prizes at various provincial and local agricultural societies' shows; and a two-row turnip seed drill, for sowing on ridges or on flat surfaces, improved and manufactured by the exhibiter.

Goss and Peene, of Rayne, near Braintree, Essex.

Three specimens of a star plough, invented by the late Mr. James Challis, of Rayne, improved and manufactured by the exhibiters; two specimens of a plough, improved and manufactured by the exhibiters; two specimens of a double tom and furrow plough, two specimens of a furrow hoe and potato plough, and two specimens of a two-horse ridge scarifier and skim plough, invented, improved, and manufactured by the exhibiters; two specimens of a plough carriage or sled, manufactured by the exhibiters; a hand turnip cutter, improved and manufactured by the exhibiters; three sizes of a circular hog trough, a cattle or sheep trough, and a rick pillar and cap, manufactured by the exhibiters; a cam chaff cutter, invented, improved, and manufactured by Messrs. Ransomes and Sims, of Ipswich; a Biddell's patent combined mill, a Biddell's patent bean cutter (awarded the silver medal at the Royal Agricultural Society's meeting at Gloucester, 1855), and a Biddell's patent steel oat mill, invented by G. A. Biddell, of Ipswich, improved and manufactured by Messrs. Ransomes and Sims, of Ipswich; a chaff cutter and a hand-power malt mill, invented, improved, and manufactured by Messrs. Ransomes and Sims, of Ipswich; a Bushe and Barter's root grater, invented by Bushe and Barter, of Lismore, improved and manufactured by Messrs. Ransomes and Sims, of Ipswich; a Gardner's double-action turnip cutter, and a Gardner's single-action turnip cutter, invented by the late J. Gardner, of Banbury, improved and manufactured by Messrs. Ransomes and Sims, of Ipswich; an improved Suffolk horse drag rake, and a hand drag or dew rake, invented, improved, and manufactured by Messrs. Ransomes and Sims, of Ipswich.

Thomas Huckvale, of Choice-hill, near Chipping-Norton, Oxfordshire.

A patent turnip thinner (obtained a prize of 3*l.* at Liverpool 1841, 5*l.* at Lincoln 1854, 5*l.* at Bath 1854, 5*l.* at Tiverton 1855, 5*l.* at Carlisle 1855), a patent turnip thinner and hoe combined, and a patent turnip thinner, invented, improved, and manufactured by the exhibiter; (new implements) two sizes of a patent corn and seed cleaning machine, invented by Henry Gardner, of Chipping-Norton, improved and manufactured by the exhibiter; a patent horse hoe for ridge or flat, a patent horse hoe for hillsides, and a box of patent balling instruments, invented, improved, and manufactured by the exhibiter.

Page and Girling, of Melton Foundry, near Woodbridge, Suffolk.

A wrought-iron scarifier, improved and manufactured by the exhibiters; a horse drag rake, improved by John Hayward, of Sutton, and manufactured by the exhibiters; a three-cylinder iron roller, and a jointed iron roller, improved and manufactured by the exhibiters; a horse hoe, invented, improved, and manufactured by the exhibiters; (new implement) a registered vegetable pulper, invented and manufactured by the exhibiters; a five-horse power thrashing machine, with straw shakers, and a two-horse power thrashing machine, invented, improved, and manufactured by the exhibiters; a chaff engine, improved and manufactured by the exhibiters; a corn dressing machine, invented, improved, and manufactured by the exhibiters; a spiral cut oat mill, and a liquid manure and water cart, with pump, improved and manufactured by the exhibiters.

Robert and John Reeves, of Bratton, near Westbury, Wiltshire.

Four sizes and specimens of a patent liquid manure drill, invented by Thomas Chandler, of Aldbourne, improved and manufactured by the exhibiters. The following prizes were awarded to this machine by the Royal Agricultural Society of England: A silver medal at York 1848, also a prize at Norwich 1849, at Exeter 1850, prize medal at the Great Exhibition 1851, the special prize given by P. Pusey, Esq., at Gloucester 1853, also at Lincoln 1854, and at Carlisle 1855; 26 other prizes have been awarded to this machine by local societies.

Alfred Sparke, S. A. 308, of Norwich.

A 5 horse power portable steam engine, a 5-horse power portable thrashing machine, a circular saw bench, a set of horse gear, a chaff cutter, a small seed drilling machine, a 3-lever manure and turnip drill, a 2-lever manure or mangel drill, a manure distributor, an 8-horse power fixed steam engine, a 7-horse power portable steam engine, a 7-horse power portable combined thrashing machine, a circular saw bench with carriages and tramway, a chaff cutter, and two sizes of an oilcake breaker, all invented, improved, and manufactured by the exhibiter.

William Wright and John Wright, of Stamford, Lincolnshire.

(New implement) a patent mill for crushing or grinding grain, invented and manufactured by the exhibiters; a patent lever horse rake, for hay, corn, stubble, couch, or twitch, &c., invented by J. C. Grant, of Stamford, improved and manufactured by the exhibiters (a prize was given to this implement by the Royal Agricultural Society of England at Liverpool, July 23, 1841, also 21 other prizes since that time); (new implement) a set of steel harrows for seeds, &c., and a portable steerage horse hoe, for turnips, beans, wheat, &c., invented and manufactured by the exhibiters.

John Oxley, of Alpha Wheel Works, near Beverley, Yorkshire.

Five sizes and specimens of a pair of cart wheels, improved and manufactured by the exhibiter.

Garrett and Sons, of Leiston Works, Saxmundham, Suffolk.

An eight-horse power portable steam engine, improved and manufactured by the exhibiters (received the prize of the Royal Agricultural Society at the Norwich meeting, 1850, and the Great Exhibition council-medal, 1851); also a seven-horse, six-horse, and a five-horse power engine of the same construction, four specimens of a portable combined machine, for steam power, invented, improved, and manufactured by the exhibiters (received the prize of the Society at the Lewes meeting, 1852, a prize medal at Lincoln, 1854, at Carlisle, 1855, and the Great Exhibition council medal, 1851); a four-horse power bolting thrashing machine (received a prize of £25 at Newcastle, 1846, £20 at Northampton, 1847, £20 at York, 1848), and a two-horse power open drum thrashing machine, invented, improved, and manufactured by the exhibiters (obtained the prize of £10 at the Lewes meeting, 1852); an improved circular sawing machine, improved and manufactured by the exhibiters; two sizes of an improved corn dressing machine, and an improved corn dressing machine, for hand power, invented, improved, and manufactured by the exhibiters; a barley aveller or hummelling machine, an improved chaff cutter for horse or steam power, a chaff cutter for horse power, and a chaff cutter for hand power, all improved and manufactured by the exhibiters; a linseed, malt, oat, bean, pea, and barley mill, manufactured by the exhibiters; an improved rape and linseed cake crusher, improved and manufactured by the exhibiters; a double-action turnip cutter, invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiters; a newly invented hand power root pulping machine, invented, improved, and manufactured by the exhibiters; a drill for general purposes (prizes being awarded for this drill at Liverpool, 1841, £10, at Derby, 1843, £30, at Southampton, 1844, £20 and a medal, at Northampton, 1847, £15, at Exeter, 1850, £10, at the Great Exhibition of 1851, included in the award of the council medal, at Gloucester, 1853, £10, and at Carlisle, 1855, £10), and a patent fore steerage, invented, improved, and manufactured by the exhibiters; a drill for turnips and manure on the flat (received the prize of £10 at the Royal Agricultural Society's meeting at Cambridge, 1840, £10 at Northampton, 1847, £10 at York, 1848, £10 at Gloucester, 1853, £5 at Garlisle, 1855, and included in the award of the great council medal of the Great Exhibition, 1851), and a drill for turnips and manure on the ridge, both improved and manufactured by the exhibiters (to this implement was awarded the prize of £20 at the Royal Agricultural Society's meeting at Bristol, 1842, £10 at Northampton, 1847, and £10 at Norwich, 1849); a three row economic seed and manure drill, invented, improved, and manufactured by the exhibiters (received the prize of £5 at the Royal Agricultural Society's meeting at Lewes, 1852, £5 at Gloucester, 1853, and £5 at Lincoln, 1854); a thirteen row lever corn and seed drill (received a prize of £10 at Norwich); an eleven row lever corn and seed drill, and an improved eight row lever corn and seed drill, improved and manufactured by the exhibiters; an eight row lever corn and seed drill, invented, improved, and manufactured by the exhibiters (received the prize of £10 at the Royal Agricultural Society's meeting at Exeter, 1850, and £5 at Lewes, 1852); an improved seed and liquid manure drill, invented by W. Spooner, of Eling, and Mr. T. Chambers, of Colkirk, and improved and manufactured by the exhibiters; a Chambers's patent broadcast manure distributor, invented by Mr. Thomas Chambers, jun., of Colkirk Hall, Fakenham, and improved and manufactured by the exhibiters (received the prize of this Society at the Lincoln meeting in 1854, and again at Carlisle, 1855); two sizes of a patent horse hoe, invented, improved, and manufactured by the exhibiters (received prizes from this society at no less than 12 of its annual meetings, viz.: Liverpool, Bristol, Derby, Southampton, Northampton, York, Norwich, Exeter, Lewes, Gloucester, Lincoln and Carlisle, and was included in the award of the great council medal at the Great Exhibition, 1851); a broadcast seed sowing engine, improved and manufactured by the exhibiters; a patent revolving horse hoe, for thinning turnips on the row for flat or ridged lands, invented by Mr. J. Martin, of Barmer Hall, Fakenham, and improved and manufactured by the exhibiters (received a prize medal at the Gloucester meeting, 1853); a patent revolving horse hoe (received prizes at the Royal Agricultural Society's meeting at Liverpool, 1841, at Lincoln, 1854, and at Carlisle, 1855); an improved double action haymaking machine, and an improved iron lever drag rake, improved and manufactured by the exhibiters; (new implement) a patent clod crusher and roller, invented by Mr. George Harriott, of Barncombe, Sussex, and manufactured by Garrett and Cross, of Maidstone; an eight horse power fixed steam engine, improved and manufactured by the exhibiters; a complete set of machinery for thrashing and dressing all kinds of grain, and delivering it fit for market into sacks in one operation, invented, improved, and manufactured by the exhibiters (received a prize medal at the Royal Agricultural Society's meeting at Gloucester, 1853, and again at Carlisle, 1855); an improved stone grinding mill, an improved chaff cutter for steam power, an improved linseed and oat crusher for steam power, an improved machine for pulping roots by steam power, an improved rape and linseed cake crusher adapted for steam power (prizes awarded for this machine at the Liverpool meeting in 1841, the Bristol meeting in 1842, and for three years in succession at Gloucester, Lincoln, and Carlisle 1853-4-5), an eight horse power portable steam engine, and a portable combined machine for steam power, all improved and manufactured by the exhibiters.

JOHN PATTERSON, of Beverley, Yorkshire.

Two sizes of a patent mill, invented and manufactured by the exhibiter.

E. R. and F. TURNER, of St. Peter's Iron Works, Ipswich, Suffolk.

A roller mill for crushing linseed, oats, malt, barley, &c., invented by Bond Turner and Hurwood, of Ipswich, improved and manufactured by the exhibiters (obtained the prize of £5 as the best linseed and corn crusher at the Royal Agricultural Society's meetings—at Norwich, 1849; at Gloucester, 1853; at Lincoln, 1854; and at Carlisle, 1855); five sizes and specimens of a roller mill for crushing linseed, oats, malt, barley, &c, and grinding beans, peas, &c. (which obtained the prizes of the Bath and West of England Society—at the Bath meeting in June, 1854, and at the Tiverton meeting in June, 1855, also the Yorkshire Agricultural Society's prize at the Ripon meeting, in August, 1854), four sizes and specimens of a roller mill for crushing malt, oats, linseed, &c., a patent combined crushing and grinding mill, an eight horse power fixed steam engine, a four horse power fixed steam engine, a six horse power portable steam engine, and a chaff cutter (which was awarded the prize of the Yorkshire Agricultural Society at the Ripon Meeting, in August, 1854), invented, improved, and manufactured by the exhibiters; a hand chaff cutter, with two convex knives, improved and manufactured by the exhibiters; an oilcake breaker for beasts, and an oilcake breaker for sheep, invented, improved, and manufactured by the exhibiters; an oilcake breaker, improved and manufactured by the exhibiters; a portable circular saw bench, a portable combined thrashing, shaking, riddling, winnowing, and barley avelling machine, and a one horse cart, with harvest raves, invented, improved, and manufactured by the exhibiters.

WEBBER, HEDGE, and Co., of Oil Mills, near Ipswich and Lowestoft, Suffolk.

An oilcake breaker for sheep, and an oilcake breaker for bullocks, invented and manufactured by E. R. and F. Turner, of Ipswich; a quantity of linseed and other seed cakes, manufactured by the exhibiters; and a variety of different oil and other seeds.

MAPPLEBECK and LOWE, of Birmingham, Warwickshire.

A patent iron plough, with two wheels, invented and manufactured by J. and F. Howard, of Bedford; a set of patent jointed iron harrows, invented by J. Howard and W. Armstrong, of Bedford, and manufactured by J. and F. Howard, of Bedford; a patent subsoil plough, or sub-pulverizer, invented and manufactured by J. and F. Howard, of Bedford; a patent light broadshare plough, invented and manufactured by E. H. Bentall, of Heybridge; a patent wrought iron drag harrow, cultivator, or scarifier, invented and manufactured by R. Coleman, of Chelmsford; two sizes of a Mercote balance scarifier or tormentor, with thirteen tines, invented by Luke Pearman, Esq., of Mercote Hall, and manufactured by the exhibiters; a chain harrow, and an expanding horse hoe, manufactured by the exhibiters; a set of patent draining tools, invented by Josiah Parkes, of London, and manufactured by W. A. Lyndon, of Birmingham (a prize of £5 was awarded to the exhibiters for these tools at the Royal Agricultural Society's meeting at Northampton in 1847, and a prize of £5 at Lewes in 1852); a set of improved trussed whippletrees, invented by E. W. Harding, of Old Springs, and manufactured by the exhibiters; three specimen sets of patent draining tools, invented and manufactured by W. A. Lyndon, of Birmingham (the prize of £5 was awarded to the exhibiters for these tools, at the Royal Agricultural Society's meeting at Northampton, in 1847, as "the best tools for general draining"); a bundle of patent spades, a bundle of patent shovels, and a bundle of solid steel digging forks, manufactured by W. A. Lyndon, of Birmingham; a set of draining tools, and a bundle of new pattern bright cast steel spades, invented and manufactured by Francis Parkes, of Stonehouse

Forge; a bundle of four pronged solid steel digging forks, a bundle of five pronged solid steel digging forks, a bundle of three pronged solid steel dung forks, a bundle of four pronged solid steel dung forks, a bundle of solid steel couch-grass forks, and a bundle of solid steel boys' digging and border forks, manufactured by F. Parkes, of Stonehouse Forge; a bundle of cast steel American hay forks, manufactured by W. A. Lyndon, of Birmingham; a bundle of iron improved barley and chaff forks, manufactured by the exhibiters; a bundle of steel improved barley and chaff forks, manufactured by F. Parkes, of Stonehouse Forge; a potato shovel, a bundle of iron tooth rakes, an improved garden engine, an improved portable garden engine, and an iron garden roller, manufactured by the exhibiters; a patent lawn mowing machine, invented by E. Budding, improved and manufactured by Ferrabee and Sons, of Thrupp Mills; four pairs of grass edging shears, manufactured by Isaac Greaves, of Sheffield; three sets of ladies' gardening tools, and a new rustic pattern garden seat, manufactured by the exhibiters; a pair of wrought iron folding garden stools, with elastic galvanized wire seat, manufactured by Barnard and Bishop, of Norwich; a pair of new rustic pattern garden chairs, manufactured by the exhibiters; a patent mangle, and a linen press, improved and manufactured by the exhibiters; a portable iron bedstead, and a patent solid stump iron bedstead, manufactured by the exhibiters; several specimens of glass enamelled water bowls, washing bowls, baking dishes, soup plates, meat and pie plates, meat dishes, and drinking cups, manufactured by the Patent Glass Enamel Company, of Birmingham; eight seamless tin milk pans, manufactured by T. F. Griffiths, of Birmingham; a bundle of household and other wood buckets, manufactured by the British Pail Company, of Leeds; six galvanized iron buckets, manufactured by A. Morewood and Co., of Birmingham; an oak barrel churn, manufactured by Robinson and Son, of Coventry; a curd mill, or grinder, manufactured by I. West, of Burton; a single cheese press, improved and manufactured by the exhibiters; two pairs of bright pulley blocks, with brass sheaves, and a pair of black pulley blocks, with iron sheaves, manufactured by the exhibiters; a pair of best warranted extra-leathered double-nailed smith's bellows, and an improved portable forge, manufactured by J. Onions, of Birmingham; a best warranted anvil, manufactured by J. Atwood, of The Nye; an improved black staple vice, a pair of iron arms and boxes, and a mail patent axle, with long bolts, manufactured by the exhibiters; a bundle of best charcoal fencing wire, manufactured by Evers and Son, of Cradley; an instrument for straining wire, manufactured by the exhibiters; two sizes of an improved lifting jack, manufactured by Colley, of West Bromwich; a grindstone, with frame and water trough complete, a light spring hand cart, a wooden wheelbarrow, an iron wheelbarrow, an iron sack cart, and a sack cart, with wooden frame, manufactured by the exhibiters; a set of imperial iron-band measures, manufactured by Ranford, of London; a set of improved gate ironwork, with hooks and screw pins complete, and a set of Goodricke Court Pattern wrought iron gate fastenings and key, manufactured by the exhibiters; an improved hand road-scraping machine, manufactured by Bourne and Harris, of Ilchester; a cast iron pig trough, and a cast iron cattle water trough, manufactured by the exhibiters; a set of cast iron stable furniture, invented and manufactured by the exhibiters; two sets of bright carthorse hames 28-inch, a pair of cart and plough traces assorted, a pair of galvanized cart and plough traces assorted, two specimens of iron improved field gates, a hand drag rake, and an improved oilcake breaker, manufactured by the exhibiters; a patent turnip cutter, invented by the late James Gardner, of Banbury, manufactured by the exhibiters; a patent root pulping and mincing machine, invented and improved by Frederick Phillips, of Brandon, manufactured by James Woods, of Stowmarket; an improved oat and bean crusher, for hand power, manufactured by the exhibiters; an improved oat and bean crusher, for hand or steam power, manufactured by Richmond and Chandler, of Salford; a portable bean mill, on a stand, and a Cooper's old approved pattern malt crusher, manufactured by the exhibiters; a two-knife chaff engine, improved and manufactured by the exhibiters; three specimens and sizes of two-knife chaff engines, invented and manufactured by J. Cornes, of Barbridge; five sizes of platform weighing machines of improved construction, two 3 cwt. and two 4 cwt. weighing machines, and a steelyard, with frame, for weighing sacks, &c., manufactured by W. and J. Avery, of Birmingham; an ornamental scroll weather vane, manufactured by the exhibiters; a Milner's "holdfast" and double fire-resisting safe, invented, improved, and manufactured by T. Milner and Son, of Liverpool; a patent fire-resisting chambered strong sheet iron box, improved and manufactured by S. Whitfield, of Birmingham; a chest of emigrant's tools, and three sizes of amateur's tool chests, manufactured by the exhibiters and others; an improved dynamometer, or draught-gauge, manufactured by the exhibiters; and a stand of models.

WILLIAM TASKER and GEORGE FOWLE, of Waterloo Iron Works, near Andover, Hampshire.

Two sizes of a patent liquid manure or water and seed drill, invented by the exhibiters and W. C. Spooner, of Eling House, near Southampton, and manufactured by the exhibiters; a two-horse power horse gear, invented, improved, and manufactured by the exhibiters; and a chaff cutting machine, invented by Mr. George Cornes of Barbridge, and manufactured by the exhibiters.

FRANCIS PRIME WALKER, of Manchester.

Two sizes of a chaff or hay-cutting machine (new implement), invented by the exhibiter, and manufactured by Messrs. Willis and Chell of Longsight, near Manchester.

J. and A. ARMITAGE, of Bury, near Ramsey, Huntingdonshire.

A drain tile and pipe machine, and ten coulter iron lever corn drill, invented, improved, and manufactured by the exhibiters; an improved winnowing and dressing machine, and an iron plough, improved and manufactured by the exhibiters.

WILLIAM BALL, of Rothwell, near Kettering, Northamptonshire.

Five specimens of an iron plough (a prize of £5 awarded to this plough for general purposes at the Royal Agricultural Society's meeting at Norwich, 1849, a prize of £7 at Exeter, 1850, a prize medal at the Great Exhibition of All Nations, 1851, a first-class medal at the Dublin Exhibition, 1853), an iron plough (a prize of £7 awarded at the Royal Agricultural society's meeting at Gloucester, 1853); a patent press corn drill on the flat, a two-horse waggon, two specimens of a one-horse cart, and a cultivator, grubber, and scarifier, all invented, improved, and manufactured by the exhibiter; and a set of whippletrees for a plough, invented and manufactured by the exhibiter.

BARNARD and BISHOP, of Norwich, Norfolk.

Four sizes of a strong wrought iron garden chair, a strong wrought iron garden seat, four sizes of a wrought iron folding garden stool with and without elastic galvanized wire seat, five sizes of a wrought iron folding garden chair with and without elastic galvanized wire seat and back, three registered poultry troughs and fountains especially adapted for young chickens, seven sizes of cast iron troughs for poultry, two circular cast iron troughs for dogs, a roll of japanned wire netting, four specimens and sizes of galvanized wire netting, four rolls of galvanized wire sparrow-proof netting, ten rolls of japanned wire hare and rabbit-proof netting, a roll of mixed mesh galvanized wire hare and rabbit-proof netting, a roll of galvanized wire sheep netting, a sample of strained wire fencing for horses and heavy cattle, and six poultry hurdles, all invented and manufactured by the exhibiters; a wrought iron sheep-fold hurdle on wheels, improved and manufactured by the exhibiters; a patent sheep-fold hurdle, invented by Henry Gilbert, of Kensington, Middlesex, and manufactured by the exhibiters; a five-bar iron hurdle, an iron hurdle for cattle and sheep, a portable iron hurdle, six sizes of a double Norfolk pig trough made of wrought and cast iron, and ten specimens of a single Norfolk pig trough made of cast iron, invented and manufactured by the exhibiters; two sizes of a Windsor pig trough, improved and manufactured by the exhibiters; an iron hutch pig trough, invented and manufactured by the exhibiters; two sizes of an iron pig trough with circular bottom, improved and manufactured by the exhibiters; two specimens of a patent barley hummeller (new implement) invented by R. R. Holden, of Barton, Cambridge, and manufactured by the exhibiters; four specimens and sizes of a patent turnip and root rasping or pulping machine for cattle or sheep, invented and manufactured by the exhibiters; ; a root grater or turnip cutter, two sizes of a turnip cutter for cattle or sheep, and a turnip cutter with revolving screen, adapted for cattle or sheep, invented and manufactured by the exhibiters; a root grater, invented by Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiters; a patent self-rolling mangle, invented by Charles Barnard, of Norwich, and manufactured by the exhibiters; a cottage mangle, and a table mangle, invented and manufactured by the exhibiters; a wrought iron folding bedstead, improved and manufactured by the exhibiters; four sizes of a cast iron window frame and casement, invented and manufactured by the exhibiters; a wrought iron hay rick for cattle or horses, improved and manufactured by the exhibiters; two sizes of an ornamental wrought iron hand gate, with or without cast iron posts, and two sizes of a wrought iron carriage gate, invented and manufactured by the exhibiters; a wrought iron fan-braced field gate, improved and manufactured by the exhibiters; a six-bar strong wrought iron field gate, invented and manufactured by the exhibiters; three sizes of a cooking range, suitable for a farm kitchen; a cottage cooking range, and a cooking range suitable for small farm kitchen or cottage, improved and manufactured by the exhibiters.

James Comins, of South Molton, Devonshire.

A paring plough (received the prize of the Bath and West of England Agricultural Society's meeting held at Taunton, June, 1852), a new pattern turnwrest plough, a set of improved drag harrows, a set of improved general purpose harrows, a pair-horse cultivator, grubber, or scarifier (received the prize of the South Devon Agricultural Society, in 1852), a subsoil pulverizer (awarded the Society's of £5 at the Norwich meeting, 1849), and a patent clod crusher, land presser, or pulverizer, invented, improved, and manufactured by the exhibiter; and a flea destroyer, invented by Dr. Lindley, improved and manufactured by the exhibiter.

R. Forshaw and Co., of Liverpool, Lancashire.

A cart and cattle weighing machine (the prize of the Highland and Agricultural Society was awarded in 1854), and four sizes of a sack weighing machine, invented, improved, and manufactured by the exhibiters; two sizes of a sheep weighing machine, invented by Fairbank, of the United States, improved and manufactured by the exhibiters; two sizes of a malt, linseed, and oat bruiser, invented, improved, and manufactured by the exhibiters; two sizes of a bean, oat, and general grain bruiser, invented by Cartmel, improved and manufactured by the exhibiters (obtained the prize of the Highland and Agricultural Society's show, 1854); a Gilbert's patent sack holder, invented by Gilbert, of London; a combined domestic corn mill and dressing machine, invented, improved, and manufactured by the exhibiters; two sizes of a chaff cutting machine, and a turnip and root slicer, manufactured by the exhibiters; and a Kealy's patent turnip cutter and root slicer, invented by Kealy and Co., of London, improved and manufactured by the exhibiters.

Edward Hammond Bentall, of Heybridge, near Maldon, Essex.

Twelve sizes and specimens of a patent iron beam broadshare and subsoil plough (received the prize of £5 as a pair horse scarifier at the meeting of the Royal Agricultural Society at Exeter, 1850, £5 as the best cultivator, grubber, and scarifier at Lincoln, 1854, also two medals—as a cultivator, and as a subsoil plough—at the Great Exhibition, 1851), a patent light broadshare plough, a patent subsoil plough, and eleven sizes of a patent plough, invented and manufactured by the exhibiter; two specimens of an original Goldhanger plough, invented by W. Bentall, of Goldhanger, and manufactured by the exhibiter; a patent iron root or windrow plough, three specimens of a patent double tom plough, a patent mangel or ridge plough, a patent mangel or ridge hoe, and a patent mangel or ridge hoe and potato plough, invented and manufactured by the exhibiter; a fall shovel plough, two sets of two horse, a set of three horse, and a set of four horse whippletrees, a double land roll, with improved heads, joints, and boxes, and a double land roll (straight), manufactured by the exhibiter; a patent set of six twobeamed harrows, heavy; a patent set of four threebeamed harrows, heavy; a patent set of six twobeamed harrows, medium; a patent set of four threebeamed harrows, medium; a patent set of six twobeamed barrows, light; a patent set of three fourbeamed harrows, light; a patent set of six threebeamed harrows; three sizes of a patent root pulper (new implement), invented and manufactured by the exhibiter; several chaff cutters, improved and manufactured by the exhibiter; a horse works for chaff cutter, and an intermediate motion, manufactured by the exhibiter; an oilcake mill, invented and manufactured by the exhibiter; an oblong cattle or water trough, a round cattle or water trough, three round hog troughs, two round pig or sheep troughs, a wood plough sled, an iron plough sled, and two specimens of a stack pillar and cap, manufactured by the exhibiter.

William Vaughan Edwards, of Swindon, Wilts.

A patent roller and clod crusher (new implement), manufactured by the exhibiter; and an improved horse hoe with rotary knives, invented and manufactured by the exhibiter.

B. Greening and Co., of Victoria Iron Works (Offices, Church Gates), Manchester, Lancashire.

A fixed specimen of patent machine-made iron wire horse, cattle, and sheep fence (new implement), a roll of patent machine-made iron wire hare and rabbit fencing (new implement), a roll of patent machine-made iron wire sheep folding fencing (new implement), and a roll of patent machine-made iron wire sheep, rabbit, &c., fence (new implement), invented and manufactured by the exhibiters; a roll of patent machine-made iron wire poultry and chicken fence (new implement), and a roll of patent machine-made iron wire ornamental garden fence (new implement), invented by Benjamin Greening, of Manchester, manufactured by the exhibiters; a roll of first quality rabbit proof wire netting, improved and manufactured by the exhibiters; a roll of second quality wire netting, manufactured by the exhibiters; a roll of poultry proof wire netting, improved and manufactured by the exhibiters; a selection of portable machine-made wire patent guards (new implement); and a patent machine made garden bordering (new implement), invented by Benjamin Greening, of Manchester, manufactured by the exhibiters; a patent machine-made portable poultry show pen (new implement), invented by Mr. Jessop, of Cheltenham, improved by Mr. Greening, of Manchester, manufactured by the exhibiters; an economical wrought iron field gate, and a premium pattern wrought iron field gate, invented by Benjamin Greening, of Manchester, improved and manufactured by the exhibiters; a pair of wrought iron carriage entrance gates, a selection of best wrought iron hurdles, and an ornamental wrought iron garden hurdling, improved and manufactured by the exhibiter; a patent portable reciprocating mangle and wringing machine (new implement), invented and improved by Benjamin Greening, of Manchester, manufactured by the exhibiters; a patent combined churn and washing machine (new implement), and a two horse power improved horizontal oscillating fixed steam engine, improved by Benjamin Greening, of Birmingham, manufactured by the exhibiters.

Thomas Grimsley, of Oxford.

A tile and brick machine (new implement), invented and improved by the exhibiter, manufactured by Lee, of Oxford.

Edward and Bryan Johnson, of Flookersbrook Foundry, Chester.

A four horse power high pressure fixed steam engine, a circular saw bench, a two horse works, and a two horse thrashing machine, invented and manufactured by the exhibiters.

Richard Coleman, of Chelmsford, Essex.

Four sizes of a patent drag harrow, cultivator, or scarifier, two sizes of a patent wrought-iron drag harrow, cultivator, or scarifier (the prize was awarded to this implement at the Royal Agricultural Society's meeting at Gloucester in 1853), and seven sizes of a patent wrought-iron drag harrow, cultivator, or scarifier, invented, improved, and manufactured by the exhibiter (a first class prize medal was awarded to it at the Paris Universal Exhibition in 1855); a patent expanding lever harrow, invented and manufactured by the exhibiter; a patent expanding extra width and heavy harrow, a patent expanding heavy harrow (a prize medal was awarded to this implement at the Great Exhibition in 1851), a patent expanding middle weight harrow, a patent expanding light harrow, and a patent subsoil harrow or pulverizer, invented, improved, and manufactured by the exhibiter; (new implements) two sizes of a patent improved land roller or clod crusher, invented and manufactured by the exhibiter; a plain three-cylinder roll, improved and manufactured by the exhibiter; (new implement) a patent clod crusher, invented and manufactured by the exhibiter, and improved by Mr. Stewart, of Ramsden Crays; two sizes of an improved Northumberland clod crusher, invented by Matthew Gibson, of Newcastle-on-Tyne, and manufactured by Richardson and Son, of Newcastle-on-Tyne (a prize medal was awarded to this implement at the Great Exhibition in 1851); a patent roller or clod crusher, invented and manufactured by William Cambridge, of Bristol; two sizes of a general purpose iron roller, improved and manufactured by the exhibiter; a one-horse iron roll, and a barley roll, manufactured by the exhibiter; a general purpose horse hoe, improved and manufactured by the exhibiter; two kinds of an improved horse hoe, invented and manufactured by J. and F. Howard, of Bedford; a patent five, six, and seven horse power portable steam engine, and a patent portable combined thrashing, straw-shaking, riddling, and winnowing machine, invented and manufactured by Clayton, Shuttleworth, and Co., of Lincoln; an improved thrashing, shaking, riddling, and winnowing machine, and an improved thrashing, shaking, and riddling machine, invented, improved, and manufactured by the exhibiter; an improved two horse power thrashing machine, improved and manufactured by the exhibiter; an improved horse gear, manufactured by James Woods, of Stowmarket; a Coleman's improved winnowing machine, two sizes of an Essex winnowing machine, improved and manufactured by the exhibiter; an improved corn dressing machine, invented, improved, and manufactured by Joshua Cooch, of Harleston; two sizes of a corn blowing machine, a single action Essex haymaker, and a double action Essex haymaker, improved and manufactured by the exhibiter; a patent double action haymaker, invented, improved, and manufactured by Smith and Ashby, of Stamford; an improved horse rake, improved and manufactured by the exhibiter; an improved steel-toothed horse rake, invented, improved, and manufactured by J. and F. Howard, of Bedford; an improved horse rake, improved and manufactured by W. Williams, of Bedford; a patent horse rake, invented, improved, and manufactured by Smith and Ashby, of Stamford; an improved registered tubular iron hand rake, invented, improved, and manufactured by Warren Sharman, of Melton Mowbray; two sizes of a wood drag rake, manufactured by Warren Sharman, of Melton Mowbray; an improved turnwrest or one-way plough, improved and manufactured by the exhibiter; a patent double action Gardner's turnip cutter (to which prizes were awarded at the meetings of the Royal Agricultural Society held at Norwich in 1849, Exeter 1850, Gloucester 1853, and Lincoln 1854), and two sizes of a patent Gardner's turnip cutter, invented by the late James Gardner, of Banbury, and improved and manufactured by Bernhard Samuelson, of Banbury; three specimens of a turnip cutter or root grater, invented by Edmund Moody, of Maiden Bradley, and manufactured by Cockey and Sons, of Frome; two sizes of a patent hand root pulping and mincing machine, invented and improved by Frederick Phillips, of Brandon, and manufactured by James Woods, of Stowmarket; a patent root pulper, invented by Bushe and Barter, of Lismore, and manufactured by Fowler and Fry, of Bristol; a two-knife chaff machine for power, and two sizes of an improved chaff machine, improved and manufactured by the exhibiter; a two-knife chaff cutting machine, invented by John Cornes, sen., of Barbridge, and improved and manufactured by James Cornes, of Barbridge (gained a prize of £5 at the Royal Agricultural Society's meeting at Lewes in 1852, £5 at Gloucester in 1853, and a prize of £3 at Lincoln in 1854); two sizes of a chaff cutting machine, invented, improved, and manufactured by Richmond and Chandler, of Salford; a small chaff cutting machine, improved and manufactured by the exhibiter; three sizes of a corn crusher, invented, improved, and manufactured by Richmond and Chandler, of Salford; a malt mill, improved and manufactured, and a malt and linseed crusher, improved and invented by Richmond and Chandler, of Salford; a malt, oat, and linseed crusher, invented and manufactured by Whitmee and Co., of London; a Biddell's patent bean cutter, a Biddell's new patent hand power steel mill, and a patent combined steel mill for beans and oats, improved and manufactured by Ransomes and Sims, of Ipswich; an improved oilcake breaker, improved and manufactured by R. Maynard, of Whittlesford; a cake breaking machine for beasts and sheep, invented, improved, and manufactured by Thomas Johnson, of Leicester; two sizes of an improved oil-cake breaker, manufactured by John Wright; a general purpose cart, invented, improved, and manufactured by Wm. Busby, of Newton-le-Willows (received a prize medal at the Great Exhibition in 1851, and has also gained six prizes at the meetings of the Royal Agricultural Society); a platform weighing machine, invented and manufactured by W. and T. Avery, of Birmingham; a double weighing machine, and a 3-cwt. weighing machine, manufactured by Dray and Co., of London; a wrought iron sack holder on wheels, invented by Gilbert, and improved and manufactured by Joshua Cooch, of Harleston; a patent cabinet mangle, invented by John Halls, of Bedford, and improved and manufactured by James Woods, of Stowmarket; a patent atmospheric Land fertilizer and weed extirpator, invented by Frederick Phillips, of Brandon, and manufactured by James Woods, of Stowmarket; a pair of French bur millstones, manufactured by William Bear, of Sudbury; a one-row ridge drill, invented and manufactured by Hornsby and Son, of Grantham: an improved lifting jack, manufactured by Gilpin and Son, of Walsall; a liquid manure pump, manufactured by Warner and Sons, of London; hog troughs of different lengths from two to five feet, manufactured by the exhibiter; two sizes of a round pig trough, improved and manufactured by the exhibiter; a galvanized cattle trough, and an iron cattle trough, manufactured by Kennard and Co.; two sizes of a poultry fountain, invented and manufactured by Warren Sharman, of Melton Mowbray; two sizes of a garden roller, and two sizes of a stack pillar and cap, manufactured by the exhibiter; a bundle of hay forks, manufactured by Gray and Sons, Sheffield; a bundle of three, four, and five prong solid steel digging forks, invented and manufactured by F. Parkes, of Stonehouse Forge; an Essex shovel, manufactured by Forster, of Stourbridge; a malt shovel, manufactured by Richard Evans, of Colchester; an iron barn shovel, and two specimens of a wrought-iron skep, manufactured by Joseph Gripper, of Colchester; a wrought-iron hurdle, and a wrought-iron sheep hurdle, manufactured by the exhibiter; a pair of plough traces, and a pair of cart traces, manufactured by Perrins, of Stourbridge; a portable steam engine, fitted with an endless railway, invented and improved by James Boydell, of Camden Works, and (new implement) a patent cultivator or plough, for steam power, manufactured by the exhibiter.

Cottam and Hallen, of 2, Winsley-street, Oxford-street, London.

A saw table, invented by George Cottam, and manufactured by the exhibiters; five sizes and specimens of a carriage setter, an oat bruiser, a chaff machine, and an Indian corn or maize thrasher, manufactured by the exhibiters; an odometer and a dynamometer or draught gauge, invented by George Cottam, and manufactured by the exhibiters; a sanitary horse pot, invented by the Sanitary Commissioners, and manufactured by the exhibiters; an improved cast-iron trap, samples of stink traps (in various sizes), samples of iron stable grates and frames (of various sizes), samples of channel grates and frames, samples of surface drains, samples of cast-iron window sashes, samples of cast-iron ventilators, samples of cast-iron air gratings, samples of cast-iron pannelling for doors, samples of dog troughs, samples of pig troughs, samples of poultry troughs (enamelled), samples of stable pails, a sample of cast-iron capping for wooden mangers, five specimens of a cast-iron stable post, two specimens of a cast-iron post for loose box, two cast-iron ramps, and two cast-iron cills, all manufactured by the exhibiters; four specimens of a patent manger, rack, and water trough, and three specimens of a manger and rack, invented by G. Cottam, and manufactured by the exhibiters; three sizes of a stable stall trough, three sizes of a corner manger of cast iron, four sizes of a cast-iron pump, a cast-iron plough, and two sizes of a cast-iron cattle trough, manufactured by the exhibiters; two sizes of a cast-iron double corner manger, invented by G. Cottam; a loose box for horses, invented by G. Cottam, and manufactured by the exhibiters; a set of corn measures, manufactured by the exhibiters; a horse stall complete, invented by G. Cottam, and manufactured by the exhibiters; a horse stall complete, manufactured by the exhibiters; samples of loose box fittings, invented by G. Cottam, and manufactured by the exhibiters; a manger and water trough (enamelled), a manger water trough and wrought-iron rack, and a sample of improved surface drain, manufactured by the exhibiters; a patent cast-iron saddle and harness bracket, an improved collar holder, and samples of saddle and harness brackets, invented by G. Cottam, and manufactured by the exhibiters; a sample of improved preserving saddle and harness brackets, samples of stable chains, two sizes of a wrought-iron circular hay rack, two sizes of a corner or angle wrought iron hay rack, and two sizes of a circular hay rack, manufactured by the exhibiters; two sizes of a serrated chain harrow, invented by G. Cottam, and manufactured by the exhibiters; three washhand basins, four sizes of a garden vase, a sample of hand glass frames, samples of garden bordering, a sample of garden or dahlia stakes, a sample of wrought iron standards for trees, a mowing machine, a taper bar field gate, two samples of sheep hurdles, a sample of light cattle hurdles, a sample of strong cattle hurdles, and a sample of ox hurdles, manufactured by the exhibiters.

Lord KINNAIRD, of Rossie Priory, near Inchture, Perth, N.B.

A reaping machine, invented by C. M'Cormick, of America, improved by James Burry and the exhibiter, manufactured by James Burry, of Millnfield, near Dundee.

HOLMES and SONS, of Prospect-place Works, Globe-lane, Norwich.

An improved eight-horse power portable steam engine, for thrashing, sawing, pumping, and agricultural purposes, and a four-horse power portable steam engine, improved and manufactured by the exhibiters; two sizes of a combined portable thrashing machine, with straw shaker, riddling, winnowing, chaff separating, and barley awning apparatus, and an improved portable clover seed-drawing machine, invented, improved, and manufactured by the exhibiters; a circular-saw table, improved and manufactured by the exhibiters; an improved prize manure distributor (awarded the Royal Agricultural Society's prize at Exeter, and also prizes at Taunton 1852, at Bath 1854, and at Norwich 1854), and a drill for corn and general purposes, invented, improved, and manufactured by the exhibiters; an improved corn and seed drill, improved and manufactured by the exhibiters; a small occupation corn drill, an economical prize manure and seed drill for flat or ridge work (awarded the prize of 5*l.* at the Royal Agricultural Society's meeting at Carlisle 1855, having been awarded the prize by the Bath and West of England Society four successive years—at Tiverton 1855, Bath 1854, Plymouth 1853, Taunton 1852—also the first prize of the Norfolk Agricultural Society at Swaffham 1855), a manure, mangel, and turnip drilling machine (awarded the Bath and West of England Society's prize at Bath 1854), a ridge drill, with rollers attached, for turnips or mangels, a seed drilling machine with levers, a wheat rake, lever harrow, and weed destroyer, a turnip and mangel wurzel drill on the ridge with manure, a two row prize hand barrow drill for turnips and mangel wurzel on ridge or flat (had the Royal Agricultural Society's prize awarded to it at Norwich 1849), a single row hand turnip and mangel wurzel drill, a steerage horse hoe, for turnip, bean, mangel wurzel, and other crops, a corn dressing and winnowing machine, a small occupation corn dressing and winnowing machine, and an improved barley awner or hummeller, all invented, improved, and manufactured by the exhibiters.

THOMAS HUNT and BROTHERS, of Earls Colne, near Halstead, Essex.

An improved engine for drawing clover and trefoil seed (which received the prize of £2 at the Bath and West of England show, June, 1855, being the only prize offered, and the silver medal of the Royal Agricultural Society, held at Carlisle, 1855), invented by the late Robert Hunt, improved and manufactured by the exhibiters; a stone mill for grinding barley, beans, &c., invented and manufactured by the exhibiters; four specimens and sizes of an improved chaff cutting machine, improved and manufactured by the exhibiters; an improved horse works, invented, improved, and manufactured by the exhibiters; an improved corn dressing machine, and a hand drill for turnip and mangold seed, improved and manufactured by the exhibiters; two specimens of an improved cup drill for turnips and mangold seed, and an improved one-row drill for turnips and guano (new implement), invented, improved, and manufactured by the exhibiters; an improved machine for making land drain pipes, improved and manufactured by the exhibiters; an improved scythe for mowing wheat, invented, improved, and manufactured by the exhibiters; a one-horse hoe for hoeing mangolds or turnips, and a chaff cutting machine, improved and manufactured by the exhibiters.

THOMAS LLOYD and SONS, of 15, Old-street-road, Shoreditch, London.

Four sizes of a wheat mill and flour dressing machine, to grind and dress at one operation, and a mill for grinding wheat for brown bread, on a wood stand, invented and manufactured by the exhibiters; three sizes of an oat bruiser on iron frame, manufactured by the exhibiters; a bean splitter with two steeled rollers, on iron frame, invented and manufactured by the exhibiters; and a barley mill, on iron frame, manufactured by the exhibiters.

WILLIAM NEWZAM NICHOLSON, of Newark-upon-Trent, Nottinghamshire.

A set of improved one-horse rhomboidal harrows, improved and manufactured by the exhibiter; two set of improved rhomboidal harrows, for two or three horses, manufactured by the exhibiter; a steerage horse hoe, invented and improved by Revell, of Barnby, and manufactured by the exhibiter; two specimens of a patent haymaking machine (new implement), invented, improved, and manufactured by the exhibiter; a land roller, with patent tubular iron shafts, improved and manufactured by the exhibiter; a Cambridge's patent roller or clod crusher, fitted with patent tubular shafts, invented by William Cambridge of Bristol, improved and manufactured by the exhibiter; two sizes of a machine for breaking oilcake for beasts and sheep (obtained prize of £5 at Norwich and £3 at Gloucester), three sizes of a machine for breaking oilcake for beasts and sheep), and rapecake for tillage (obtained prize of £5 at Exeter, and the prize medal at the Great Exhibition of 1851), a complete corn dressing or winnowing machine for roughing, dressing, or blowing corn, a winnowing or corn dressing machine, which may also be used as a blower, a corn dressing, roughing, and blowing machine, for smaller occupations, a corn dressing machine, for small occupations, and a small portable steam engine on wheels, invented, improved, and manufactured by the exhibiter, and a chaff cutter and corn crusher, to be driven by it; a washing machine, and a machine for wringing and mangling, improved and manufactured by the exhibiter; an improved lawn mowing machine, invented by Budding; a set of improved stable fittings, improved and manufactured by the exhibiter; four sizes of a cottage cooking grate (obtained prize of £5 at York, £5 at Exeter, and silver medal at Lincoln), a cooking grate, suitable for farm kitchens, a superior large grate, for farm kitchens, and a cosmopolitan cooking stove, invented, improved, and manufactured by the exhibiter.

OLDHAM and BOOTH, of Kingston-upon-Hull, Yorkshire.

Two sizes of a strong and powerful bone mill, to be driven by steam or other power, and a strong and powerful bone-dust mill (new implement), improved and manufactured by the exhibiters.

THOMAS STAPLETON, of Dock Office Row, Hull, Yorkshire.

A French bed stone, for grinding corn, improved by the late Messrs. Stapleton and Co., of Dock Office Row, Hull, and manufactured by the exhibiter; two specimens of a French runner stone for grinding corn, and a French bed stone for grinding corn, improved and manufactured by the exhibiter; a patent bed stone, invented by Thomas Barnett, of Hull, and manufactured by the exhibiter; a patent runner stone, invented by John Smith, and manufactured by the exhibiter; a self-adjusting spring boss, for driving mill-stones, invented and manufactured by Mr. Harrison, of Brighouse, Yorkshire; a cast iron bed-stone bush manufactured by the exhibiter; an iron proving staff in mahogany case, and cast steel chisels for dressing mill-stones, improved and manufactured by the exhibiter; cast steel picks for grey or peak stones, a pair of iron blocks, an iron chisel-haft for dressing mill-stones, and a wooden chisel-haft, manufactured by the exhibiter.

HENRY PHILLIPS, of Offchurch, near Leamington, Warwickshire.

A reaping machine (new implement), and a horizontal windmill (new implement), invented by Charles Phillips, of Offchurch, and the exhibiter, and manufactured by the exhibiter.

GEORGE ROBINSON, of Deptford, Kent.

A machine for grinding, bruising, and splitting all sorts of grain, hay, straw, &c. (new implement), invented and manufactured by the exhibiter.

THOMAS AND ROBERT SHEEN, of Buckingham road, Aylesbury, Buckinghamshire.

An iron plough, with two wheels (new implement); an improved Kent plough (new implement), and three specimens of an iron plough (new implement), invented and manufactured by the exhibiters; a wrought iron scarifier, with nine tines, and a seven tined scarifier invented by Armstrong, and manufactured by the exhibiters; a wrought iron horse hoe, manufactured by the exhibiters; two sizes of a set of wrought iron harrows; a horse power flour mill (new implement), invented and manufactured by the exhibiters; a hand power chaff cutter, and a corn crusher, invented by Richmond & Chandler, of Salford; a chaff cutter, invented and manufactured by Smith and Ashby, of Stamford; a wrought iron bean mill, invented and manufactured by Samuelson, of Banbury; two sizes of a cattle trough, and three sizes of a cast iron pig trough, manufactured by the exhibiters.

W. SMITH, of Kettering, Northamptonshire.

Two sizes of an improved double blasted winnowing machine (a prize of £5 was awarded to which at the Yorkshire Agricultural Society, and also three other prizes at other meetings), two specimens of an improved steerage horse hoe with double bar (received a first class medal at the Great Exhibition, Paris, 1855, and prizes at numerous other meetings), and an improved steerage horse hoe with single bar, invented, improved, and manufactured by the exhibiter.

HENRY A. THOMPSON, of Lewes, Sussex.

A patent hay making machine (new implement), an improved lever horse rake, an improved one horse cart, and a combined one horse cart, water cart, and irrigator (new implement), invented and manufactured by the exhibiter; a wrought iron horse hoe, a strong wrought iron horse hoe and grubber, a one row turnip drill, and a barrow broadcast seed drill, improved and manufactured by the exhibiter; a "paragon" portable steaming apparatus, invented, improved, and manufactured by the exhibiter; a portable liquid manure pump, a portable pump on tripod stand, with flexible hose, and a nine feet improved trussed field gate, invented and manufactured by the exhibiter; a ten feet improved trussed entrance gate, invented, improved, and manufactured by the exhibiter; an economic drainage level (received the prize of a silver medal at the Royal Agricultural Society's show at Lincoln in 1854), invented and manufactured by the exhibiter; an improved economic draining level (new implement), invented, improved, and manufactured by the exhibiter; a prize telescope drainage level (received the prize of a silver medal at the Royal Agricultural Society's show at Gloucester in 1853), invented and manufactured by the exhibiter; a drainage level, invented by Blundell, and manufactured by Horne and Co., of London; a workman's drainage bevel (new implement), invented and manufactured by the exhibiter; a graduated levelling staff with a sliding vane and set screw, improved and manufactured by the exhibiter; a set of steel corn measures, invented and manufactured by the exhibiter.

FREDERICK PHILLIPS, of Brandon, Norfolk, and JAS. WOODS, of the Suffolk Iron Works, Stowmarket, Suffolk.

Seven specimens of a patent hand root pulping and mincing machine (awarded the only prizes at the Lincoln and Carlisle meetings of the Royal Agricultural Society of England), and two specimens of a patent root mincing and pulping machine, for horse, steam, or water power (new implement), invented by Frederick Phillips, improved and manufactured by James Woods; a patent disc or wheel root mincing and pulping machine (new implement), invented and manufactured by Fred. Phillips; a model of Phillips' steam generator and steaming apparatus, invented by Frederick Phillips, and manufactured by James Woods; two sizes of a patent poppy and weed extirpator, lever harrow, and atmospheric land fertilizer (new implement), invented by Frederick Phillips, of Brandon, improved and manufactured by James Woods, of Stowmarket; a patent horse rake, invented, improved, and manufactured by J. and F. Howard, of Bedford (the Royal Agricultural Society awarded the prize to this implement at Exeter, 1850, and again at Lewes, 1852, at the Great Exhibition of All Nations Messrs. H. also gained the prize medal for this implement); three sizes and specimens of a roller crushing mill for hand or power, and a registered crushing and grinding mill, invented, improved, and manufactured by James Woods, of Stowmarket; a roller crushing mill, and a hand roller universal mill, improved and manufactured by James Woods, of Stowmarket; four sizes of a chaff cutting machine, invented by John Cornes, of Barbridge, and improved and manufactured by James Woods, of Stowmarket; three sizes of a chaff-cutting machine, two sizes of an oilcake breaker, a rape and linseed cake crusher, and an improved bean mill, invented, improved, and manufactured by Jas. Woods, of Stowmarket; a Biddell's bean cutter, invented by G. A. Biddell, of Ipswich, improved and manufactured by Ransomes and Sims, of Ipswich; a barley aveller or hummelling machine, and a 3-horse fixed steam engine, invented, improved and manufactured by J. Woods, of Stowmarket; two sizes of Gardner's turnip cutter, invented by James Gardner, of Banbury, improved and manufactured by James Woods, of Stowmarket; a turnip chopper for hand, two sizes of a horse works, a horse power for one or two horses, a four-horse power portable thrashing machine, two sizes of a two-horse portable thrashing machine with straw shaker, a double barley roll (awarded a prize of ten guineas by the Royal Agricultural Society), and an iron furrow roll, invented, improved, and manufactured by James Woods, of Stowmarket; five sizes of a Cambridge's patent press wheel roller, invented by William Cambridge, of Bristol, improved and manufactured by James Wood, of Stowmarket; five sizes of a Wood's iron land and pasture roller, and a Suffolk broadshare, invented, improved, and manufactured by James Woods, of Stowmarket; a Finlayson's patent self-cleaning harrow, improved and manufactured by James Woods, of Stowmarket; a patent prize cultivator, invented, improved, and manufactured by R. Coleman, of Chelmsford; a set of scarifying or duck's-foot harrows, invented, improved, and manufactured by J. Woods, of Stowmarket; a steerage horse hoe, improved and manufactured by J. Woods, of Stowmarket; a Norfolk scarifier, invented by F. Phillips, of Brandon, improved and manufactured by J. Woods, of Stowmarket; a waggon cart, invented and manufactured by the exhibiters; a one horse cart, fitted with harvest shelvings complete, invented, improved, and manufactured by the exhibiters; an improved one-horse farm cart,, invented, improved, and manufactured by J. Woods, of Stowmarket; three sizes and specimens of a patent cabinet mangle, invented by J. Halls, of Bilderstone, improved and manufactured by J. Woods, of Stowmarket; a pair of cart wheels and axletree, and a pair of improved cart wheels and axletree, invented, improved, and manufactured by J. Woods, of Stowmarket; an improved double-action haymaking machine, invented by H. A. Thompson, of Lewes, improved and manufactured by J. Woods, of Stowmarket; an improved asphalting apparatus, a double action weighing machine, a single action weighing machine, and an iron frame weighing machine, invented, improved, and manufactured by J. Woods, of Stowmarket; a Birmingham pattern weighing machine, improved and manufactured by J. Woods, of Stowmarket; two specimens of an ornamental flower stand, invented and manufactured by J. Woods, of Stowmarket; a washing machine or churn, invented and manufactured by W. N. Nicholson, of Newark; a bullock water-trough, a square water pan for cattle, a round water pan, a round hog trough, and a wrought-iron plough sledge, invented and manufactured by J. Woods, of Stowmarket; two sizes of a fire-proof box, invented, improved, and manufactured by Milners, of Liverpool; and two sizes of a pair of iron arms and boxes, invented, improved, and manufactured by J. Woods, of Stowmarket.

ROBERT TINKLER, of Penrith, Cumberland.

Four sizes and specimens of a revolving barrel churn, invented, improved, and manufactured by the exhibiter; and two specimens of a box churn, improved and manufactured by the exhibiter.

Frederick James Utting, of the Eagle Foundry, Wisbech, Cambridgeshire.

A patent regulating roller and clod crusher (new implement), invented and manufactured by the exhibiter; a cake-breaking machine, improved and manufactured by the exhibiter; and a plough to be called "The Wisbech plough" (new implement), invented and manufactured by the exhibiter.

Mary Wedlake and Co., of 118, Fenchurch-street, London.

An oat bruiser, invented and manufactured by the exhibiters; an oat bruiser, and a French burr stone flour mill and dresser, manufactured by the exhibiters; a gorse or furze bruising machine (new implement), and utilitarian or manger feeding machine, invented, improved, and manufactured by the exhibiters; a mangle, and a chaff cutting machine, manufactured by the exhibiters.

Edward Weir, of 16, Bath-place, New Road, London.

A double cylinder irrigator, liquid manure pump, fire and garden engine; a hose pipe reel; and a portable wrought iron liquid manure pump, with tripod stand and flexible pipe, invented and manufactured by the exhibiter; a set of apparatus for liquid manure or water cart, improved and manufactured by the exhibiter; a spirit draining level, and a workman's pendulum level, for use in digging drains, laying roads, &c., invented and manufactured by the exhibiter; several samples of woven hose pipe for conveying liquid manure or water, manufactured by Waithman and Co., of Lancaster; a sample cask of peat charcoal manure, and a sample cask of concentrated manure, invented and manufactured by Isaac Brown and Co., of Carlisle.

Whitworth and Eastwood, of Albert Works, Blackburn, Lancashire.

Eight different sizes and specimens of a patent compound action churn (new implement), invented by Jas. Eastwood, and improved and manufactured by the exhibiters.

William Williams, of Bedford.

Six sizes and specimens of a set of patent four-beam diagonal iron harrows (which obtained a prize at the meeting of the Royal Agricultural Society at Derby, 1843; at Southampton, 1844; at Shrewsbury, 1845; at Northampton, 1847; at Norwich, 1849; at Exeter, 1850; also the prize medal at the Great Exhibition of 1851, and a prize at the Lewes meeting, 1852, and Gloucester, 1853), and a pair of patent drag harrows, invented by Laurence Taylor, of Cotton End, and improved and manufactured by the exhibiter; a patent improved lever horse rake (to which a prize was awarded at the meeting of the Royal Agricultural Society held at Southampton, in 1844; at Norwich, 1846; and at the Royal Agricultural Society of Ireland, held at Dublin, 1851), a three wheel improved lever scuffler or scarifier, two sizes of a four wheel improved lever scuffler or scarifier, two sizes of a small two knife chaff engine, three sizes of another two knife chaff engine, an improved one row horse hoe, and an improved three row horse hoe, all invented, improved, and manufactured by the exhibiter; a set of improved whippletrees, and a set of equalizing whippletrees, manufactured by the exhibiter; a wrought iron plough, two sizes of a draining pipe and tile machine (which received a prize of £25 at the Northampton meeting, 1847), a combined horse hoe, scarifier, and bouting plough, a double breasted bouting plough, and a patent brick and tile machine, invented, improved, and manufactured by the exhibiter.

James Smyth and Sons, of Peasenhall, Suffolk, and Witham, Essex.

A patent small occupation lever corn drill (which received a prize of £5 at the Royal Agricultural Society's meeting at Gloucester, 1853), three specimens of a patent nine row lever corn drill, two specimens of a patent ten row corn drill, a patent eleven row lever corn drill (which received a prize of £5 at the Royal Agricultural Society's show at Derby, 1843), two specimens of a patent twelve row corn drill, three specimens of a patent thirteen row lever corn drill, three specimens of a patent fourteen row lever corn drill, two specimens of a patent fifteen row lever corn drill, two specimens of a patent thirteen and two row corn drill, a patent fourteen and five row corn drill, a patent fourteen and six row corn drill, a patent three row turnip and mangel wurzel seed drill, a patent five row turnip and mangel wurzel seed drill, a patent two-row turnip and manure drill, a patent three row turnip and manure drill (for which a prize of £10 and a silver medal were awarded at the Royal Agricultural Society's Show, 1844), a patent four rowed turnip and manure drill, a patent five rowed turnip and manure drill, a patent six rowed turnip and manure drill, a patent general purpose drill (which received a prize of £10 at the Royal Agricultural Society's Show at Liverpool, 1841), and a patent thirteen-rowed general purpose drill, all invented, improved, and manufactured by the exhibiters.

James Barton, of 370, Oxford-street, London.

Eight different sizes and specimens of patent stable fittings, and a set of improved loose-box fittings, invented, improved, and manufactured by the exhibiter; two specimens of loose-box fittings, improved and manufactured by the exhibiter; two sizes of an enamelled corner manger for stall, and a galvanized iron corner manger for stall, manufactured by the exhibiter; a patent angle iron hay box, invented and manufactured by the exhibiter; a wrought iron corner hay rack, manufactured by the exhibiter; several specimens of improved stable guttering; three sizes of a square horse pot, trapped; a tee piece for improved stable guttering; and an angle piece for stable guttering, invented and manufactured by the exhibiter; a stable grate and frame; a 9-inch square horse pot, trapped; a 9-inch square mare pot, trapped; a galvanized wrought iron stable pail; a galvanized wrought iron pail; a cast iron rick stand; a cast iron enamelled milk pan; a liquid manure pump; a patent gutta percha suction for pump; a cast iron garden or stable pump; two specimens of a 12-inch galvanized poultry trough; and two specimens of a 15½-inch galvanized iron poultry trough, manufactured by the exhibiter; several specimens and sizes of iron poultry troughs and dog troughs; an 18-inch patent, a 20-inch, and a 22-inch enamelled iron milk pan; a 9-inch, a 10-inch, and an 11-inch enamelled iron bowl; a galvanized wrought iron pail; a painted wrought iron pail; and a board, 6 feet by 1 foot, containing sundry connections for stable purposes—viz., harness, brackets, hooks, chains, &c.

James Boydell, of Camden Works, Camden Town, Middlesex.

A locomotive traction or stationary portable engine, invented and improved by the exhibiter, and manufactured by Boydell and Glasier, of Camden Works, Camden Town; a small cart fitted with Boydell's endless railway, invented by the exhibiter, and manufactured by Boydell and Glasier.

William Crowley, of Newport Pagnell, Buckinghamshire.

A one-horse cart for general purposes (awarded the prize at the Great Exhibition in 1851), and a liquid manure or water cart, invented, improved, and manufactured by the exhibiter; and a set of Newport hames, invented and manufactured by the exhibiter.

Edward Dowling, of 2, Little Queen-street, Holborn, London.

A 3 cwt. patent lever weighing machine and sack barrow (new implement), invented and manufactured by the exhibiter; a 2 cwt. patent lever weighing machine and sack barrow, invented by the exhibiter; a patent weighing machine, invented and manufactured by Day and Millward, of Birmingham; a patent weighing machine, invented by Day and Millward; a wrought iron weighing machine, a high single weighing machine, a single weighing machine, a small-sized double weighing machine, an iron plate weighing machine, a dwarf weighing machine, a sack barrow, and a double weighing machine, manufactured by the exhibiter; two sizes of a weighing machine (new implement) on sack barrow, fixed, invented and manufactured by the exhibiter; three sizes of a family scale machine and set of weights, two sizes of a weighing machine with delf plate, a tin scale machine, two sizes of a flour scale machine, a flour scale on beam, and hay steelyards, manufactured by the exhibiter.

Chard & Munro, of Clarke-street, Bristol.

A light one or two horse Wiltshire farm waggon, improved and manufactured by the exhibiters; an improved Hannam's skeleton harvest cart, invented by J. Hannam, Esq., of Burcot, Oxon, and improved and manufactured by the exhibiters; a light one horse improved Scotch farm cart, and a light single-rave agricultural cart, improved and manufactured by the exhibiters; and a light Coburgh or family conveyance, invented, improved, and manufactured by the exhibiters.

William Dray & Co., of Swan-lane, London.

An eight-horse power fixed steam engine, a six-horse power fixed steam engine (a prize of £10 awarded by the Royal Agricultural Society's meeting held at Lincoln, 1854), a four-horse power portable steam engine, and a four-horse power portable thrashing machine, with shaker and dressing apparatus combined, invented, improved, and manufactured by the exhibiters; an improved patent reaping machine, invented by Obed Hussey, of the United States, improved and manufactured by the exhibiters (received the prize of the Royal Agricultural Society at Lincoln, 1854, in addition to those of the Bath and West of England, the Stirling, the Burnley, and North Lancashire, all in 1854; also in 1855 the Bath and West of England Agricultural Society at Tiverton, the Royal Agricultural Committee at Somme, Amiens, and the Royal Agricultural Improvement Society of Ireland at Carlow); an improved patent reaping machine, called "The Union," invented by John Palmer and others, of Stockton, improved and manufactured by the exhibiters (obtained the £20 prize of the Royal Agricultural Society in 1855); four specimens of an improved registered winnowing and blowing machine, invented, improved, and manufactured by the exhibiters; a patent grain and seed separator, invented by G. Salmon, of Illinois, improved and manufactured by the exhibiters (awarded the first prize silver medal at the New York Exhibition, 1853, and the silver medal of the Royal Agricultural Society at Carlisle, 1855); a registered chaff cutter, and an improved chaff cutting machine, invented, improved, and manufactured by the exhibiters; four sizes of a registered chaff cutting machine, invented, improved, and manufactured by Richmond and Chandler, of Salford; an improved post mill for agricultural purposes, invented, improved, and manufactured by the exhibiters; three sizes of an improved grain crushing machine, invented, improved, and manufactured by Richmond and Chandler, of Salford; an improved mill, three sizes of an improved malt mill, and three sizes of a large wheel mill, invented, improved, and manufactured by the exhibiters; an "Alliance" plough (new implement), invented by M. Armelian, of Paris, improved and manufactured by the exhibiters; two sizes of a compound action clod crusher and roller, invented and improved by J. Patterson, of Beverley, and manufactured by Brown Brothers, of Stockton; an iron subsoil plough, invented, improved, and manufactured by Gray and Co., of Uddington; an improved patent self-cleaning lateral-toothed grubber, invented by J. Tennant, of Monkton, improved and manufactured by the exhibiters; three sizes of a lawn mowing machine, invented, improved, and manufactured by A. Shanks and Co., of Arbroath; an improved lawn mowing machine; a combined rack, manger, and water trough; an improved post, ramp, and cill; an enamelled centre manger; a corner enamelled manger; a wrought iron corner hay rack; a wrought iron circular front hay rack; two sizes of an agricultural cart; a light one horse waggon; a strong agricultural waggon; three sizes of an improved wrought iron circular corn bin; three sizes of an improved wrought iron corn bin (flat back); two bronzed garden tables; an ornamental bronzed garden seat; seven sizes of an ornamental garden chair; a portable farm forge; a portable farm forge with chimney complete; a farm bench and vice; and a set of forge tools—all invented, improved, and manufactured by the exhibiters; five sizes of an American churn, invented by J. Dalphin, of the United States, improved and manufactured by the exhibiters; a portable steaming and boiling pan, three sizes of an improved Sussex churn, two sizes of an improved washing, wringing, and mangling machine, and an iron wheel-barrow, invented, improved, and manufactured by the exhibiters; a bundle of digging forks, invented, improved, and manufactured by Lyndon of Sheffield; three sizes of a garden engine; a patent tubular iron field gate; a pair of tubular iron entrance gates, with Bellfield's patent stops; a patent tubular iron gate; a pair of patent entrance gates; specimens of patent tubular fencing; a one-horse gear; a domestic flour mill; a circular iron saw table; an iron cheese press; a double weighing machine; two sizes of a weighing machine for agricultural purposes; and a lever screw jack—all invented, improved, and manufactured by the exhibiters; a Moore's patent corn mill (new implement), invented, improved, and manufactured by T. Moore, of Spring Gardens; specimens of galvanized wire netting, invented, improved, and manufactured by the exhibiters; a basket of specimens of patent glass roofing tiles, invented, improved, and manufactured by James Bowron and Co., of Stockton.

Hugh Carson, of Warminster, Wiltshire.

Three sizes of a registered cross-cut wheel roller and clod crusher, a seven-share cultivator or scarifier, a five-share cultivator or scarifier, a wrought-iron plough for light lands, and a wrought iron plough for heavy lands, invented, improved, and manufactured by the exhibiter; two sizes of a wrought-iron horse hoe, improved and manufactured by the exhibiter; (new implement) a chaff cutting engine for steam power, invented, improved, and manufactured by the exhibiter; a chaff cutting engine for horse or steam power, and a chaff cutting engine for horse or hand power, improved and manufactured by the exhibiter; two sizes of a chaff cutter for hand power, invented, improved, and manufactured by the exhibiter; four specimens of a patent iron frame turnip cutter, invented by Edmund Moody, late of Maiden Bradley, improved and manufactured by the exhibiter (received prizes from the Bath and West of England Agricultural Society, at Taunton in June 1852, at Plymouth in June 1853, and a special prize at Tiverton in June 1855); a single cheese press with double lever (for which the prize was awarded at the Plymouth meeting of the Bath and West of England Society in 1853), and a double cheese press with double levers, invented, improved, and manufactured by the exhibiter; and an oilcake crusher, improved and manufactured by the exhibiter.

Thomas Catchpool, jun., of Colchester, Essex.

A portable thrashing machine for steam power, improved and manufactured by the exhibiter; a three-cylinder 24-inch field roll, and an iron-bellied roll in one cylinder, manufactured by the exhibiter; an iron-bellied roll in three cylinders, invented, improved, and manufactured by the exhibiter; an iron cattle trough on wheels, invented and manufactured by the exhibiter; an iron cattle feeding-trough or water cistern, manufactured by the exhibiter; an iron rick or stack frame, improved and manufactured by the exhibiter; a pair of cast-iron garden vases, and a pair of small iron vases, manufactured by the exhibiter.

John Bailey Denton, near Stevenage, Hertfordshire.

Specimens of sets of draining tools, and a set of draining implements for a foreman, manufactured by sundry makers; wells or sumpts for junctions and long main drains, and outlets for main drains, invented by the exhibiter, and manufactured by Stanley and Bower, of Peterborough; (new implement) a spud or hoe, invented by the exhibiter, and manufactured by James Dear, of Baldock.

John Fowler, Jun., of Havering, Essex.

A steam draining plough, invented and improved by John Fowler, jun., of Havering, and manufactured by Messrs. Ransomes and Sims, of Ipswich (received a silver medal at the Royal Agricultural Society's meeting at Exeter, a silver medal at Gloucester when worked by horses, and a silver medal at Lincoln when worked by steam power); (new implements) two specimens of a steam surface plough, invented by John Fowler, jun., of Havering, and David Greig, of Barking Side, and manufactured by Messrs. Ransomes and Sims, of Ipswich.

Gidney and Son, of East Dereham, Norfolk.

A Norfolk sheepfold hurdle, a sheepfold hurdle, and (new implement) a housemaid's barrow, invented and manufactured by the exhibiters; a garden wheelbarrow, improved and manufactured by the exhibiters; two bundles of Prussian hoes, assorted sizes, (new implement) a bundle of horizontal hoes, assorted sizes, and a bundle of drill hoes, assorted sizes, invented, improved, and manufactured by the exhibiters; a bundle of Norfolk hoes, improved and manufactured by the exhibiters; a Vernon hoe, and a bundle of garden rakes, assorted sizes, manufactured by the exhibiters; two sizes of a corn or barn shovel, two sizes of a cast-iron water cock, and (new implement) a self-acting greenhouse fumigator, improved and manufactured by the exhibiters; a patent greenhouse fumigator, invented by Brown, and manufactured by Barber and Groom, of Holborn, London; a bean cutter, and a furnace door and frame, with sliding door, of cast iron, improved and manufactured by the exhibiters; a bundle of iron garden stakes, for dahlias, standard roses, &c., invented and manufactured by the exhibiters; an iron garden roller, 20 in. wide and 20 in. diameter, manufactured by the exhibiters; a lawn mowing machine, invented by Budding, improved and manufactured by B. Samuelson, of Banbury; (new implement) an iron garden scraper, invented and manufactured by the exhibiters; a model of strained wire fence, six wires high, invented, improved, and manufactured by the exhibiters; a bundle of bright fencing wire, manufactured by Hackett, of Brampton; a cast-iron cottage window, and a cast-iron cottage window casement, fitted with hinges and fastenings, improved and manufactured by the exhibiters; a cast-iron stable window, with arch top and sliding ventilator to admit air, 20 in. wide and 33 in. high, manufactured by the exhibiters; a cast-iron circular stable window to swing on centre, 36 in. diameter, invented and manufactured by the exhibiters; a galvanized iron stable bucket, manufactured by the exhibiters; an iron tank pump, improved and manufactured by the exhibiters; three specimens and sizes of a set of Royal Sussex truck baskets, invented and manufactured by Thomas Smith, of Hurstmonceaux, Sussex (received the prize medal at the Great Exhibition of England, 1851, and France 1855); a bundle of garden shears of various sizes, manufactured by Brooks, of Sheffield; a Prussian garden engine, manufactured in Prussia; a garden or fire engine to hold 30 gallons, improved and manufactured by the exhibiters; a brass garden syringe, manufactured by the exhibiters; a zinc garden syringe, invented and manufactured by the exhibiters; (new implement) a potato masher, invented in Paris, improved and manufactured by the exhibiters; (new implement) a registered potato steamer, invented by Bentley, and manufactured by Wilson, of London; three sizes of a wire flower-pot stand, invented and manufactured by the exhibiters; a specimen of the Norfolk horticultural watering-pot, manufactured by the exhibiters; a Chiswick water pot, improved and manufactured by the exhibiters; a hand weeding fork, invented and manufactured by the exhibiters; a registered earwig trap, invented and manufactured by E. Edwards, of Birmingham; a set of improved switching bills, improved by the exhibiters, and manufactured by Brooks, of Sheffield; and an oiling can, invented in Paris, and improved and manufactured by the exhibiters.

John Goucher, of Worksop, Nottinghamshire.

A seven-horse-power patent drum of thrashing machine, invented, improved, and manufactured by the exhibiter; a five-horse-power patent drum of thrashing machine, invented and manufactured by the exhibiter.

James Haywood, Jun., of Phœnix Foundry and Engineering Works, Derby.

A seven horse power patent portable steam engine, a one horse cart, and a cheap, simple, and improved fence and field gate, invented, improved, and manufactured by the exhibiter; a set of cast iron stable fittings, improved and manufactured by the exhibiter; two sizes of an iron cheese press, manufactured by the exhibiter; a very elegant and ornamental cast iron vase, invented, improved, and manufactured by the exhibiter; a pair of Medici vases and pedestals, and a cast iron vase, invented, improved, and manufactured by the exhibiter; several specimens of a cast iron ornamental garden chair, invented and manufactured by the exhibiter; two castings of the Lord's Supper (black and bronzed), manufactured by the exhibiter; a set of six ornamental fruit dishes, in cast iron, invented and manufactured by the exhibiter; five pieces of cast iron ornamental garden bordering, of various sizes, improved and manufactured by the exhibiter; three sizes of an octagon hand glass frame, in iron, for garden purposes, three garden rollers of various sizes, a cast iron pillar for rick stand, a set of cast iron pig troughs, a cast iron circular pig trough, a small circular pig trough, a set of sucking pig troughs, an iron pump, and an iron barrow wheel, manufactured by the exhibiter; two sizes of a letter copying press, improved and manufactured by the exhibiter; two sizes of an iron stench trap, invented, improved, and manufactured by the exhibiter; a cast iron ornamental table, with circular revolving top; a cast iron umbrella stand (bronzed), an ornamental fence of wrought iron and cast iron, and cast iron gate, and a strained wire fence, manufactured by the exhibiter; an improved Derby cooking apparatus, invented, improved, and manufactured by the exhibiter; two iron taps, manufactured by the exhibiter; a linseed cake mill, with single pair of rolls, and a linseed cake mill, with double pair of rolls, invented and manufactured by the exhibiter; a set of iron furnace pans or coppers, a steaming apparatus for agricultural purposes, and two cast iron windows, suitable for cottages, manufactured by the exhibiter; a cast iron ornamental fountain, invented and manufactured by the exhibiter; a brass steam whistle, and five brass steam taps of superior quality, manufactured by the exhibiter; three brass lubricators for agricultural and other machinery, invented, improved, and manufactured by the exhibiter; an improved grease cock for engine cylinders, improved and manufactured by the exhibiter; a lift and force pump on oak plank, and three garden syringes in brass, manufactured by the exhibiter.

Hayes and Son, of Stamford, Lincolnshire.

An improved harvest cart, invented, improved, and manufactured by the exhibiters; an improved one horse Scotch cart, improved and manufactured by the exhibiters; a light spring lorrie, or dray, invented, improved, and manufactured by the exhibiters; a light spring pair horse waggon, improved and manufactured by the exhibiters.

David Dunne Kyle, of 120, Albany-street, Regent's-park, London.

A steam cultivator (new implement), invented and manufactured by the exhibiter.

Thomas Milford, of Thorverton, near Collumpton, Devonshire.

An improved plank side one horse cart, for general, farm, road, and harvest purposes (new implement), invented by Frank P. Milford, of Thorverton, and manufactured by the exhibiter; an improved, Gloucester, Lincoln, and Tiverton, prize one horse cart, for general purposes (awarded the prize of the Royal Agricultural Society at Gloucester, 1853, a silver medal by the same Society at Lincoln, 1854, and the prize of the Bath and West of England Agricultural Society at Tiverton, 1855), and a stout two horse cart, for farm, road, and harvest purposes, invented, improved, and manufactured by the exhibiter; an improved plank side two horse waggon, for farm, road, and harvest purposes (new implement), invented and improved by Thos. Milford, jun., and manufactured by the exhibiter: and an improved two horse tipping waggon, for farm, road, and harvest purposes (awarded the prize at the Bath and West of England Society's meeting at Taunton, 1852, at the Society's meeting at Plymouth, 1853, at Bath, 1854, and again at Tiverton, 1855), invented, improved, and manufactured by the exhibiter.

Benjamin Matthews, of Myland, near Colchester, Essex.

A skeleton Scotch cart, and a tip shovel, invented by W. F. Hobbs, of Boxted, improved and manufactured by the exhibiter.

George Milford, of Thorverton, near Collumpton, Devonshire.

A one horse cart (new implement), and a two horse waggon (new implement), invented, improved, and manufactured by the exhibiter.

Warren Sharman, of Melton Mowbray, Leicestershire.

A bundle of improved registered tubular iron hand, hay, or corn rakes (24 teeth), invented, improved, and manufactured by the exhibiter; a bundle of wood drag rakes with iron teeth, improved and manufactured by the exhibiter; a bundle of improved registered tubular iron twitch rakes, a bundle of improved registered iron garden or lawn rakes, a bundle of sheet-iron root or chaff scuttles of different sizes, and a bundle of galvanized iron root or chaff scuttles of different sizes, invented, improved, and manufactured by the exhibiter; a bundle of sheet-iron filling scuttles, a bundle of galvanized iron filling scuttles, a bundle of sheet-iron baskets, and a bundle of galvanized iron baskets, invented and manufactured by the exhibiter; a bundle of sheet-iron buckets, and a bundle of galvanized iron buckets, manufactured by the exhibiter; a poultry fountain with two outlets, and a poultry fountain with three outlets, invented and manufactured by the exhibiter; an iron sack truck, manufactured by the exhibiter; several sizes and specimens of a handsome cast-iron garden chair with wood bottom (statue bronzed), and two sizes of a handsome cast-iron hat, coat, and umbrella stand (statue bronzed), designed and manufactured by the Coalbrookdale Company, of Coalbrookdale; six sizes and specimens of a terra cotta vase and pedestal, a terra cotta garden seat, and a terra cotta fern pot, designed and manufactured by Gibbs, Canning, and Co., of Tamworth; a portable platform contracting weighing machine, invented and manufactured by W. and T. Avery, of Birmingham; a portable double weighing machine, manufactured by the exhibiter: a set of stable fittings, manufactured by Thomas Johnson, of Leicester; and a linseed cake-breaking machine, for beasts and sheep, manufactured by the exhibiter.

Hill and Smith, of Brierley-hill Iron Works, Dudley, Staffordshire.

Two sizes of a wrought-iron skim or pair-horse scarifier and cultivator, invented, improved, and manufactured by the exhibiters (it obtained the first prize of its class at the Derby meeting of the Royal Agricultural Society); (new implement) a wrought-iron broadshare and cultivator, (new implement) a wrought-iron plough, (new implements) three sets of patent wrought-iron harrows, and (new implement) a wrought-iron barley roller, invented and manufactured by the exhibiter; a patent press wheel roller or clod crusher, invented by William Cambridge, of Bristol, and manufactured by the exhibiters; a chaff cutting machine, invented and manufactured by the exhibiters; two sizes of a Cornes' registered chaff cutter, manufactured by the exhibiters; a Cornes' registered chaff cutting machine, invented and manufactured by the exhibiters (is the one to which the Royal Agricultural Society has awarded its prize "for the best chaff cutting machine for power" for nine successive years, the last occasion being the last meeting of the Society at Carlisle, and it also obtained the Great Exhibition prize medal in 1851); three sizes of a Cornes' registered chaff cutting machine, manufactured by the exhibiters; a circular iron vermin proof rick stand, an oblong iron vermin proof rick stand, and a specimen of two rick stand pillars, invented and manufactured by the exhibiters; a rotary iron screening machine, for screening gravel, ashes for manure, &c., sand, coal, &c., manufactured by the exhibiters; a horse-power work for driving chaff cutting and other machines, and a corn dressing or winnowing machine, invented and manufactured by the exhibiters; a set of corn dressing sieves and screen, manufactured by the exhibiters: two sizes of a wrought-iron expanding horse hoe, invented and manufactured by the exhibiters (the silver medal of the Royal Agricultural Society has been awarded to this implement, and also the silver medal of the Yorkshire Agricultural Society); an iron granary crane and winch (to which a premium has been awarded by the Royal Agricultural Society), an iron granary crane, a wrought-iron cow crib, and two sizes of a wrought-iron sheep rack on four wheels (the silver medal of the Society having been awarded to this implement), invented and manufactured by the exhibiters; a patent wrought-iron sheep folding hurdle, and a patent sack holder, invented by Henry Gilbert, of London, and manufactured by the exhibiters; a patent sack holder and barrow combined, invented by Henry Gilbert, of London, improved by Joshua Cooch, of Harleston, and manufactured by the exhibiters; a set of wrought and cast iron pig troughs, and a set of circular revolving iron pig troughs, manufactured by the exhibiters; a wrought-iron barrow for general purposes, and a wrought-iron barrow with apparatus for heating gas tar, &c., invented and manufactured by the exhibiters; a specimen of patent black varnish, a block of asphalte or bitumen, for laying barn floors, &c., and an iron portable forge on wheel, with bellows complete, manufactured by the exhibiters; two sizes of a set of improved cast-iron stable fittings, two sizes of a wrought-iron ornamental garden seat, two sizes of an ornamental galvanized iron and wire garden seat, two sizes of a rustic cast-iron garden seat, an ornamental rustic cast-iron table flower stand, a selection of game proof wire netting, a set of ornamental game proof wrought iron garden hurdles, a set of wrought iron game proof ox hurdles, a wrought iron field gate and posts (the silver medal of the Royal Agricultural Society of England, and the first prize of the Royal Agricultural Improvement Society of Ireland, having been awarded to this gate and posts), a wrought iron gate for field entrances, a wrought iron entrance gate, a wrought iron field gate, a set of wrought iron entrance gates with side gates and pillars, a pair of wrought iron carriage entrance gates and pillars, a set of wrought iron hurdles (which have obtained premiums at several agricultural meetings), and a set of premium continuous wrought iron fences (the silver medal of the Royal Agricultural Society was awarded to these fences at the Southampton, and again at the Shrewsbury meetings), invented and manufactured by the exhibiters.

William F. Roe, of 70, Strand, London.

A hydraulic ram, improved by Freeman Roe, late of 70, Strand, London, manufactured by the exhibiter; a farm fire pump, a garden pump on barrow, a force pump, a yard pump, a liquid manure pump on stand, a garden engine, a cast iron fountain, a cast iron ornamental vase, and a gas horse singeing apparatus, manufactured by the exhibiter; horse tubing of various descriptions of canvas, leather, india rubber, and gutta percha, for watering gardens; a working model of the hydraulic ram with tanks, &c., manufactured by the exhibiter.

Thomas Wedlake and Richard Dendy, of Hornchurch, near Romford, Essex.

Two sizes of a two horse plough, and a set of four iron harrows and whippletree, manufactured by the exhibiters; a broadshare cultivator (new implement), invented and manufactured by the exhibiters; a three hoed scarifier or pea break, manufactured by the exhibiters; a registered clod crusher (new implement), invented and manufactured by the exhibiters; a six horse power portable steam engine, and a four horse power fixed steam engine, improved and manufactured by the exhibiters; a portable thrashing or bolting machine for steam power (new implement), invented and manufactured by the exhibiters; a patent double action haymaking machine with striking gear (known as "the Essex haymaker," received the medals at the meetings of the Royal Agricultural Society at Derby, 1844, and Shrewsbury, 1845), invented, improved, and manufactured by the exhibiters; a single action hay machine, and a patent self acting hay barley or stubble horse rake (new implement), invented and manufactured by the exhibiters; a chaff cutting machine for steam or horse power, improved and manufactured by the exhibiters; two sizes of a chaff cutting machine, a malt and oat bruiser, and a malt oat and bean crusher, manufactured by the exhibiters; an American oilcake breaker, for steam, horse, or hand power (received the medal at the meeting of the Royal Agricultural Society at Northampton, 1847), invented and manufactured by the exhibiters; a one horse power spur gear, manufactured by the exhibiters; and a dressing and winnowing machine, improved and manufactured by the exhibiters.

John Whitehead, of Preston, Lancashire.

A No. 0 drain pipe and tile machine, a No. 1 drain pipe and tile machine (prizes being awarded to this machine at the Royal Agricultural Society's Meetings, viz., at York 1848 £20, at Norwich 1849 £20, at Exeter 1850 commendation, at the Universal Exhibition London 1851 prize medal, was not exhibited in 1852, at the Royal Agricultural Society's Meeting at Gloucester 1853 £10, at Lincoln 1854 prize medals, at Carlisle 1855 £5, at the Universal Exhibition of Paris 1855 first class medal, besides a number of prizes at local meetings), a double box drain pipe and tile machine, a double box steam or horse power drain pipe and tile machine, an improved iron pug mill, an improved brick pressing machine, an economic chaff engine, a turnip cutter, a combined wringing and mangling machine, a mangling and wringing machine and washing machine combined, and a roll of iron wire and galvanized iron wire game proof netting, invented, improved, and manufactured by the exhibiter.

J. Bullock and Co., of Hope Iron Works, Primrose-street, Bishopsgate, London.

A specimen of strained wire fencing for cattle, a specimen of continuous iron fencing adapted for sheep and light cattle, and a specimen of continuous iron fencing suitable for heavy cattle, invented and manufactured by the exhibiters; a pair of light wrought iron folding gates, and a strong wrought iron field gate, manufactured by the exhibiters; a garden roller, a cast iron ornamental pedestal and vase, a cast iron ornamental flower stand, a cast iron ornamental window flower guard, two sizes of a cast iron garden seat, two sizes of a cast iron ornamental garden seat, invented and manufactured by the exhibiters; a wrought iron garden chair, invented, improved, and manufactured by the exhibiters; a galvanized wrought iron chair, invented and manufactured by the exhibiters; a cast iron garden chair, invented, improved, and manufactured by the exhibiters; a cast iron ornamental chair, and a cast iron window flower guard, invented and manufactured by the exhibiters; a cast iron window flower guard, manufactured by the exhibiters; a set of samples of cast iron garden bordering, a wrought iron tree guard, a wrought iron wheelbarrow, a cast iron pillar for corn stacks, and a cast iron hand glass frame, invented and manufactured by the exhibiters; a cast iron hand glass frame, manufactured by the exhibiters; a harness room stove, a portable brewing copper, a cast iron pump, samples of cast palisade bars, a galvanized cast iron furnace pan, and two sizes of a round pig trough, invented and manufactured by the exhibiters; a wrought iron sheep hurdle, a wrought iron light cattle hurdle, a wrought iron cattle hurdle, a strong wrought iron hurdle, a wicket gate, and a footpath gate and curve, invented, improved, and manufactured by the exhibiters; a specimen of light wrought iron garden fencing, invented and manufactured by the exhibiters; a specimen of iron and wire garden fencing, a wrought iron folding garden stool, a pair of light garden gates with pilasters, a field gate, a pair of light ornamental entrance gates, a specimen of patent black varnish, an ornamental wire flower stand, a cast iron ornamental table, two sizes of an iron and wire arch, a set of wire flower borders, and a specimen of strong iron and wire cattle fencing, invented, improved, and manufactured by the exhibiters; a specimen of wrought and wire fencing for pleasure grounds, manufactured by the exhibiters; a specimen of strong cattle fencing, a specimen of light fencing, a sample of wire trellis work, a wire pheasant coop, a set of gravel sieves, a bundle of galvanized wire netting, and a specimen of malt kiln wire, invented, improved, and manufactured by the exhibiters.

Henry C. Mount, Secretary of the Patent Brick Machine Company, 37, King William-street, London.

A patent brick machine (new implement), invented by James Hart, of London, improved by the above company, and manufactured by Messrs. Collinge and Co., of Lambeth, London.

Frederick J. Wilson, of 32, Cadogan-place, Chelsea, Middlesex.

(New implement) the Siamese wheelbarrow, and two sizes of a cottage allotment barrow (small size), invented by the exhibiter, manufactured by Smith and Ashby, of Stamford; a navigator's barrow, invented and improved by the exhibiter, manufactured by Smith and Ashby, of Stamford; the Crimean hedge slasher and the balance scythe handle, invented and improved by the exhibiter, manufactured by Tyson, of Milnthorp.

William Smith, of Little Woolstone, Fenny Stratford, Bucks.

(New implement) four sizes and specimens of a patent steam cultivator, (new implement) a patent steam subsoil plough, (new implement) a patent hook for turning ploughs and cultivating implements by steam power, (new implement) a patent cultivator for horse power, with extra set of tines, all invented and manufactured by the exhibiter.

James and Frederick Howard, of Bedford.

Five sizes and specimens of a patent iron plough with two wheels (received the first prize of £5 at the Royal Agricultural Society's meeting at Liverpool, £5 at Bristol, £10 at Shrewsbury, two prizes of £10 each—for the best plough for light, and best plough for heavy land—at Newcastle-upon-Tyne, also at Northampton, York, Norwich, and Exeter, and at Lincoln, 1854, the first prize being for the tenth time awarded to this implement as the best plough; at the last meeting of the Highland and Agricultural Society of Scotland the exhibiters receiving the first prize, and at the last meeting of the Royal Agricultural Improvement Society of Ireland, held at Carlow in August, 1855, the first prize for the best plough for general purposes, the prize medal of the Great Exhibition 1851, and the gold medal of honour at the Paris Universal Exhibition 1855), two sizes of a patent iron plough, two sizes of a patent iron swing plough, a patent iron plough, a patent double furrow plough, a new patent turnwrest plough, two improved ridge or double breast ploughs, and a patent subsoil plough or sub-pulverizer (the Royal Agricultural Society awarding the first prize of £5 to this implement at Gloucester), invented and manufactured by the exhibiters; a wrought iron plough sledge, manufactured by the exhibiters; a set of improved trussed whippletrees, invented by Egerton Harding, and improved and manufactured by the exhibiters; a set of improved iron whippletrees, a set of improved equalizing whippletrees, three sizes of a set of patent jointed iron harrows (the following six prizes being awarded to J. and F. Howard by the Royal Agricultural Society of England:—Derby meeting first prize of £5, York meeting first prize of £5, Exeter meeting first prize of £5, Lewes meeting first prize of £5, Gloucester meeting two first prizes of £5 each, two first prizes at the last meeting of the Highland and Agricultural Society of Scotland, two first prizes at the last meeting of the Royal Agricultural Society of Ireland held at Carlow, August, 1855, and three first prizes at the Great West of England Show, June, 1855), a set of patent three beam iron harrows, two sizes of a set of patent four beam iron harrows, two sizes of a set of patent two beam iron harrows, two sizes of a set of patent iron drag harrows, two sizes of an improved horse hoe (the Royal Agricultural Society awarding the prize to this implement at Lewes and Gloucester), and three sizes of a patent horse rake (the first prize having been awarded to this implement for four years in succession at the Great West of England Show, and having also gained the two first prizes last offered by the Royal Agricultural Society of England, and the first prize at every agricultural meeting where it has competed), invented and manufactured by the exhibiters; a new patent arrangement of ploughs, with travelling frame, for steam power, and a new patent sheave or pulley, invented and patented by J. Howard, of Bedford, and G. W. Baker, of Woburn, Bedfordshire, and manufactured by the exhibiters.

Joseph Warren, of Maldon, Essex.

Nine sizes and specimens of a patent plough, and (new implement) two specimens of a patent plough, invented and manufactured by the exhibiter; two sizes of a plough, manufactured by the exhibiter; a patent plough, invented and manufactured by the exhibiter; a patent double tom plough, and two specimens of a tom plough, invented, improved, and manufactured by the exhibiter; a furrow plough and hoe for one horse, a furrow plough, and a patent plough, invented and manufactured by the exhibiter; three sizes of a cultivator or scarifier, and two specimens of a surface plough, invented, improved, and manufactured by the exhibiter; two sizes of a set of iron harrows, and a plough sledge, manufactured by the exhibiter; two specimens of a corn rick pillar and cap, and a vegetation hoe, invented and manufactured by the exhibiter; an oilcake machine, manufactured by the exhibiter; a double iron roll, improved and manufactured by the exhibiter; a Cambridge plough, and a plough sledge, three sizes of a round pig trough, and a chaff machine, manufactured by the exhibiter; and a patent plough, invented, improved, and manufactured by the exhibiter.

James Adam and Co., of Crown-wharf, Shad Thames, Southwark, London.

A mill for splitting beans and grinding and crushing corn, invented and manufactured by the exhibiters.

John Allin Williams, of Baydon, near Hungerford, Wilts.

(New implement) A three furrow plough, scarifier, cultivator, and grubber combined, (new implement) a three furrow plough, (new implements) two sizes of a scarifier, cultivator, and grubber, and (new implement) a steam hauling machine, invented and manufactured by the exhibiter.

John Whitmore, of Wickham Market, Suffolk.

A seven-horse-power portable steam engine, and a portable combined thrashing, shaking, winnowing, chaff separating, elevating, avelling, and sacking machine, invented, improved, and manufactured by the exhibiter.

ROOTS, SEEDS, MODELS, SAMPLES, &c.

Thomas Gibbs and Co., the seedsmen to the Royal Agricultural Society of England, corner of Half-Moon-street, Piccadilly, London.

A collection of dried specimens of permanent grasses, containing all the most useful and valuable varieties for laying down land to permanent meadows and pastures; a collection of specimens of wheats, barleys, oats, &c., &c., in the ear, including all the varieties in general cultivation in England; a collection of samples of various permanent and other grass seeds, a collection of general agricultural and other seeds, and a collection of roots of orange globe and other mangel wurzels.

JAMES TREE and Co., of 22, Charlotte-street, Blackfriars-road, Surrey.

A cattle gauge and key to the weighing machine, a circular cattle gauge, a circular slide rule and cattle gauge, an improved cattle gauge adapted for any market, and a farmer's slide rule and cattle gauge, invented by J. Ewart, of Newcastle-on-Tyne, and manufactured by the exhibiters; and an improved draining level, invented by B. Webster, of Southampton, and manufactured by the exhibiters.

WILLIAM BULLOCK WEBSTER, of 16, Adam-street, Adelphi, London.

A model of the Wormley Bury Farm buildings, erected on the estate of Henry John Grant, Esq., near Hoddesdon, Herts, in 1855. Models showing that the most useful and economical mode of erecting farm-buildings is by adopting, as a principle, sheds eighteen feet wide, and such length as may be required.

THOMAS PRENTICE and Co., of Stowmarket, Suffolk.

A sample of Prentice's cereal manure, a sample of pure superphosphate, a sample of Prentice's patent turnip manure, a sample of sulphuric acid, and five different specimens of asphalte, manufactured by the exhibiters.

GILSON MARTIN, of Goosetree, near March, Cambridgeshire.

A set of underdraining tools, improved by the exhibiter, and manufactured by John Friar, of Thorney, Cambridgeshire.

BENJAMIN LAMBERT and Co., of 3, Hatton-court, Threadneedle-street, London.

A sample of "Poudrette de Bondy," the natural European guano, the exhibiters are the importers and the sole consignees, and it is manufactured by Richer and Co., of Paris.

THOMAS READ and Co., of 4, Agar-street, Strand, London.

A sample of plain and ornamental sign writing, a sample of ornamental writing on glass, a sample of plain writing on leather cloth, a sample of ornamental writing, a sample of enamelling and gilding on glass, a sample of writing on cardboard, a sample of frames for tablets or tickets, a sample of embossing and writing on glass, and a sample of show cards.

ISAAC WRIGHT, of Great Bentley, Colchester, Essex.

Specimens of grass seeds and agricultural roots.

THOMAS SALMON, of Chelmsford, Essex.

Twenty specimens of agricultural or garden seeds.

GEORGE CHIVAS, of Chester.

Specimens of orange jelly turnip, introduced by the exhibiter. Specimens of natural grasses, in a growing state and in full flower.

PETER LAWSON and SON, of 27, Great George-street, Westminster.

Specimens of roots, seeds, &c.

We hasten to correct two errors which crept into our report of the Chelmsford Meeting. Mr. Overman's shearling was only *highly commended* at Norwich, being beaten by sheep from Lord Walsingham's flock. Again, Chamber's new liquid-manure drill is an improvement upon Spooner's, and *not* on Chandler's invention; Mr. Spooner having been from the first, if we recollect right, in the hands of Messrs. Garrett. At the same time let us supply an omission, and offer personally a word of thanks to Mr. Hudson, the Secretary of the Society, that any member of that body who knows his merits will hasten to second. To the services of Mr. Gibbs we have already spoken.

STEAM CULTURE,

AS EXEMPLIFIED AT THE LATE CHELMSFORD MEETING.

In reviewing the progress made in the implement department during the past year, as exemplified at Chelmsford, the different projects on steam culture must obviously occupy a prominent place. These we shall take alphabetically, in the following order: thus—Boydell's, Coleman's, Fowler's, Howard's and Smith's, discussing each separately. The other novelties in our note-book are Clayton's, Chamberlaine's, and Williams' brick machines, Pye's process of flax manufacture, and Keevil's cheese-making apparatus.

Before entering upon the different systems of steam culture, it may be as well to offer a few preliminary remarks on the prize of £500 offered by the Royal Agricultural Society.

The offer of the Society was so worded as to place the £500 in as safe keeping as the £1,000 guano prize; for "an economical substitute for the plough and spade" is one of those impossibilities too gross to be seriously entertained. All the implements exhibited, for example, were merely adaptations of the plough and other existing things—as grubbers, scarifiers, and rotary diggers—to steam. In point of fact, to make a long story short, the grand object to be attained is the substitution of steam for horses, and therefore the obvious course for the Society to pursue was to offer the prize accordingly. Again, as this substitution is manifestly a work of time and progress, the £500 ought to have been divided, and awarded according to the successful progress made by the respective competitors. And this is what we hope will yet be done; for to repeat the farce of the guano prize, or pronounce an unmerited award, would be to stultify the Society in the face of the whole world. To suppose that we can attain to perfection in the harnessing of steam to the plough, so as to perform successfully all the operations in the field the plough now does, is contrary to the order of things; for the greatest steam-culture-enthusiast never dreamt of jumping into such a state; an apprenticeship, of necessity, having to be served. We are not here writing a prefatory apology, but the contrary; for the short experience in the trial fields at Chelmsford proved to the satisfaction of exhibitors how much they had to learn, and how much they could improve their respective projects, to meet the varied demands upon them, by different soils, &c.

With these observations, generally applicable, we now proceed to discuss the different projects individually, in the order stated above, taking first

BOYDELL'S TRACTION ENGINE.

This is one of the engines ordered by Lord Panmure for the Crimea, but which his lordship, on the establishment of peace, kindly allowed Mr. Boydell to exhibit at Chelmsford. It is similar to the one tried at Willesden, and now being severely tested by the Board of Ordnance, in various ways, at Woolwich, against horses, for hauling heavy siege-guns and *materiel;* and as we very recently gave a description of the improvements effected in the latter, we have only to refer to these in the case of the former, both being alike as to mechanism.

At Chelmsford, comparatively little was done to test its capabilities in the field as a traction engine for agricultural purposes, owing to the large plough invented and manufactured by Mr. Coleman not having been sufficiently matured for successful experiment in the trial field, as subsequently shown, and the dynamometer of Mr. Amos being insufficient to test its traction force. The only two trials indicating an approximation to the truth were, first, in hauling Biddell's scarifier, and second, in hauling five ploughs, both in the heavy-land field. In each case, the pressure of steam was about 60lbs., equivalent to about 14-horse power. In the first, all that can be said is, that the traction force exceeded 40 cwt., the steam-horse snapping with comparative ease the hook which attached him to the dynamometer, with the index registering its highest result! In the second, each plough was estimated as turning a good four-horse furrow; so that the traction force was equivalent to that of twenty horses.

The practical conclusion to be drawn from these data is that Boydell's traction engine is capable of applying more than its steam force to the cultivation of the soil on comparatively level land. In other words, its traction force is greater than its motor force.

That this is one of the greatest and most important results yet obtained in the application of steam to agricultural purposes must appear evident to any one who has given the facts of the case due consideration; for it not only solves the question of entirely superseding the horse in the cultivation of the soil—whether Experience is ultimately to give her judgment in favour of direct traction or indirect traction—but also in the cartage of its produce and like operations. No doubt much has yet to be learned before the results here contemplated are finally attained; but the practical question, either in judging of the merits of any project or carrying out improvements, is to adhere as closely as possible to the principles which lead to the grand object sought; for once get an economical power to supersede the horse, and we can safely leave mechanical details in the hands of our implement makers.

As usual, a vast amount of prejudice was levelled against the "steam horse" at Chelmsford; and although becoming beautifully less and less, it is still throwing obstruction in the way of progress: and therefore we have selected the following objections for refutation —viz., the loss of steam by the gearing of the crank-shaft pinion in the top of the carriage-wheel, the locomotion of a heavy engine over soft land, and the tear-and-wear upon such a cumbrous and belabouring piece of machinery as the "steam horse" unquestionably is.

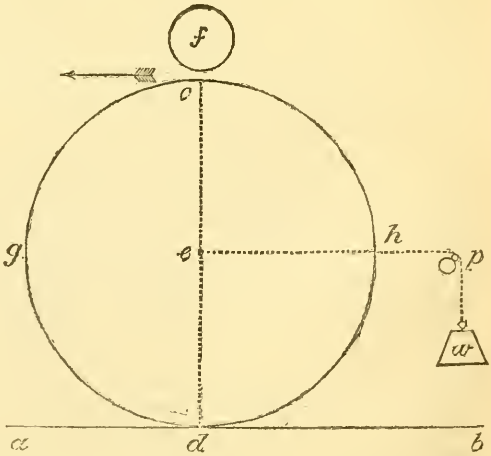
The first objection arises from too limited a knowledge of the cycloid of which the cart-wheel furnishes an illustration, or a too superficial observance of the facts of the case as involved in the rotation of the wheel over the ground.

With regard to the cycloid, objectors appear to overlook the fact that the double velocity in the vertex is the sum of two velocities—the one the uniform velocity of the generating point around the axis of the generating circle, and the other the translatory velocity of the generating point and circle through space, these two velocities being equal the one to the other. Now as the small pinion gearing in the wheel can only move at the uniform velocity of the latter, and as the steam moves at the same speed with the pinion, it consequently follows that the steam only moves at half the velocity of the top of the wheel in its onward motion through space: so that, in accordance with the familiar rule in mechanics, "power is gained at the expense of space," the wheel being an endless lever of the second kind; but from the steam being carried along or from the translation of the motor force, along with the end of the lever to which it is applied, it (the motor force, or steam) gains half the space gone over, and hence performs double the effect in a given time to what it otherwise would do were it stationary and the top of the wheel receding from it.

To those not acquainted with the cycloid, let us have recourse to the following diagram, to illustrate the movements of a cart wheel, or the large wheel of Boydell's traction engine, and its action as a lever of the second kind.

Let *f* be the small pinion gearing in the top of the large wheel *g h*, at c, and moving in the direction of the arrow; let *e* be the axis of the wheel, *a b* the ground over which it rolls, and *w* a weight representing the traction force exerted over the pulley *p* by means of a rope. Then—

With regard to motion, all the points in the periphery of the wheel move at a uniform velocity around the axis *e*, the points *g*, *d*, and *h* moving at the same velocity as *c*. Again, there is a second motion in the direction of the arrow, arising from the wheel rolling over the ground, which is termed the translation of the wheel; and these two motions or velocities are equal; for the point c would describe a curve equal in length to the line *b a*, during the time the wheel is rolling from *b* to *a*. Now, at the point *c* both these velocities are in



one direction, viz., that of the arrow; hence their sum is the double velocity in the vertex c of the cycloid, which the point c in the wheel $g\ h$ generates in rolling along the line $a\ b$. Were the pinion placed at g, the uniform velocity around the axis would be downwards, across the path of the wheel, at d it would be in the opposite direction of the arrow, and at h upwards; so that it would be absurd to suppose that the pinion would be equally effective in those positions as at the top of the wheel.

Again, with regard to leverage, when the motor force is applied to the top of the wheel at c, then $c\ d$ is a lever of the second kind, with the fulcrum at d; and as the traction force is from the axle e, we have radius to the diameter, as the motor force is to the traction force; so that, if the motor force is 2,000 lbs., the traction force will be 4,000 lbs., under a statical view of the question, otherwise expressed thus—

$$e\,d \ : \ c\,d \ :: \ 2{,}000\,\text{lbs.} \ : \ 4{,}000\,\text{lbs.}$$

Were the motor force of 2,000 lbs. applied below the axis e, then the lever would be one of the third kind, or a losing lever, so that the traction force would always be less than the motor force; or, applied at half the radius, we would have—

$$e\,d \ : \ \frac{e\,d}{2} \ :: \ 2{,}000\,\text{lbs.} \ : \ 1{,}000\,\text{lbs.}$$

It will thus be seen that the objections under the first head fall to the ground, under whatever view we take of them.

The second objection has repeatedly been refuted by experiment; for at Hounslow, Willesden, and Woolwich, the unanimous testimony of all present acknowledged that the engine did infinitely less harm to the ground in rolling over it than the feet of the horses required to perform the work would have done. What can be more conclusive than this? Those who raise such groundless objections must surely forget the damage horses' feet make in wading through wet, heavy, clay land, or soft porous soils. And what is specially deserving of notice is the fact that, under the greater depth and comminution of the soil under steam culture, the harm done by horses' feet will be increased accordingly; thus increasing the importance and value of the endless railway and traction engine in all field work.

The last objection, as to tear and wear, ought also to be left for experience to settle, as nothing can be more imprudent and objectionable than premature conclusions on questions of this kind; for the result at issue is one of comparison between rival systems, undergoing improvements. Were we called upon to pass an opinion—which we invariably decline in all questions connected with experimental science—we should feel disposed to say that tear and wear will be found to be inversely as the traction force from a given pressure of steam; for if a motor-force of steam equivalent to the draught of 24 horses is spent in producing the result of 12 horses, as in one case, then 12-horse power is consumed in friction tear and wear. On the other hand, if 14-horse power of steam produces a result of 20 horses, as in another case, there must be less force of steam wasted in overcoming friction tear and wear. But, as we have already said, experiment must be left to settle questions of this kind.

It will thus be seen that each of these objections falls to the ground—the first two as being contrary to fact, and the last as amounting to a mere prejudice, without any material foundation as yet, on which to base an argument. But, while we thus refute objections, our readers must not conclude that we are recommending the "steam horse" as a perfect piece of mechanism, the contrary being fact; for it has already undergone improvements, and is still capable of being greatly more so improved. What we have specially directed the attention of our readers to, are fundamental principles, embracing, first, the endless railway, as applicable to all portable engines, so as to make them self-locomotive, and thus do away with the necessity of horses, and the damage which their feet do to the soil; second, to the position of the crank-shaft-pinion gearing in the top of the wheel, so that the motor-force shall gain space, and thus save steam, while it works with the greatest lever power, consequently producing the greatest amount of disposable traction force for traction purposes in culture and cartage; and third, that the traction force of the steam horse is greater than his motor-force, on comparatively level land—a result which was not exemplified at Chelmsford by indirect traction.

It must not, however, be understood from this that we are inferring that the question of direct traction *versus* indirect traction was settled at Chelmsford; for such, as we anticipated in a previous article, is still an open one for experiment to solve.

COLEMAN'S CULTIVATOR FOR STEAM POWER.

This implement was designed and manufactured for being hauled by Boydell's traction engine, the breadth of the former being sufficient to cover the path or breadth of the latter. This, to carry out the theory of direct-traction successfully, is necessary, so that the general principle on which the implement is constructed is sound.

In mechanism, it consists of a triangular frame, or nearly so, supported in front by two steerage wheels, and behind by two large wheels acting as a fulcrum to the combination of levers, in connexion with the ploughs. On each of the two expanding sides is a set of ploughs, the front plough being a foot-one for opening the first furrow. The ploughs are set for gathering up the ridge, which is finished at once—one ridge each land length—the mould-boards being set inwards, each the breadth of a furrow beyond its precursor. Each plough has a very ingenious parallel leverage, which is worked separately or conjointly, at the pleasure of the engineer who guides them.

Into the details of mechanism we shall not go further at present, as some alterations are necessary to meet the peculiar demands of different qualities and states of soils, Mr. Colman not having had time and opportunity to experiment upon more than one quality of soil prior to the show. On that peculiar soil, we are informed, the implement worked to the satisfaction and even surprise of all who saw it, the engine snorting away triumphantly, with the implement ploughing a narrow ridge after it, leaving the furrows perfectly laid, and the whole work finished in a workmanlike manner. But in the trial field—a different quality and state of soil for working—no provision was made for this difference, and the exhibitor had again, at the feet of Experience, to take another lesson.

In this we shall find, when we come to notice the other projects, that he was no exception from the common rule, each of the exhibitors being in a similar position. Those who have any experience in agricultural mechanics, and our summer-meeting competition-trials, will not be surprised at this, for it must take several years before steam-culture implements can be brought to such a state of perfection as to plough diversities of soils in quality, during the drought of July.

One erroneous objection was brought against this implement, which we must refute—"An instrument with such a number of ploughs can never work," it was said, "the only plan likely to be successful being a single plough drawn by a rope." But those who advance premature objections of this kind forget that experience will ultimately settle such questions in the field; and that, in the meantime, probability is in favour of a mean between two extremes; for a single plough is in practice a project too childish to be entertained; as the tear and wear upon the wire rope and machinery, and the attendance in men—one at the engine, one at each end of the field attending the anchors, and one at the plough—place the £ s. d. view of the question beyond the regions of possibility and profit. W. B.

THE CHELMSFORD MEETING.

Sir,—The transactions of the past week will occupy an important page in the "annals" of modern agriculture, and I think will be regarded as an era in its calendar from whence may be dated the confirmation of new ideas on the advantages derivable from the free and social intercourse of nations. Those ideas were theoretically shadowed forth by the Great Exhibition of 1851, when the cosmopolitical principle was started, for the first time in the history of the world, of an universal commercial brotherhood and community of interests. These ideas and this principle have been endorsed by, at least, the English and French nations, who are now carrying them into practical operation. I view the proceedings which took place at the Chelmsford Meeting of the Royal Agricultural Society as tangible proof that it is so understood by both parties; that henceforth the two nations will have one common ground, on which they can meet and promote each other's welfare without the smallest danger to their individual interests. May the unanimity, the good fellowship, be not only permanent as regards England and France, but may it diffuse itself abroad amongst the other nations of Europe! This will prove the best cure of the war-spirit, the surest guarantee of the continuance of peace, and the most certain promoter of universal prosperity amongst the nations which adopt it.

I had the pleasure of attending the Chelmsford Meeting, one of the most successful the Royal Agricultural Society has yet held. I need not say one word in praise of the arrangements, nor go into any details of the exhibition of animals or machinery. These have been sufficiently discussed by the *Mark Lane Express;* but my object in writing is to remark upon the decidedly commercial character these agricultural gatherings have now assumed. Originally intended, I presume, for the purpose of promoting competition with the view of improvement, they have now become also marts for the sale of the living or dead specimens exhibited. They have almost fully accomplished the primary object of their institution, and are now taking a practical commercial form, which results in actual business, a vast amount of which is transacted both at and after them. The deep interest manifested by those who attended the late show, the strict—I might say severe—scrutiny which both the cattle and the machinery underwent, and the extensive sales effected of both, are speaking proofs of the utility of the meeting, and of the appreciation in which they are held by the public, and especially the agricultural body.

I confess, that upon going through the vast display of machinery and implements which occupied so extensive a portion of the field, my mind misgave me with respect to the profit-and-loss account which the exhibiters would ultimately have to bring to a balance. To me it appeared problematical how it could possibly pay the expense of bringing, not only those ponderous machines which nothing but railroads could transport, but the smaller implements and utensils, some of which seemed to me out of place on such an occasion. Upon inquiry, however, of the parties themselves, I found they were perfectly satisfied with the results hitherto, and thought nothing of the expenses to which they are subject. This will be understood when I state, as one instance, that on questioning a machinist who exhibited (amongst other articles) a patent mangle of a very neat and novel construction, he told me that since the meeting at Carlisle last year, he had sold *a thousand of them!* It is probable that had he not attended that meeting he would not have disposed of a twentieth part of that number. Not only, however, is the manufacturer of such improved machines benefited; but the public at large, and especially the purchasers of them, receive an advantage from the greater facility they afford in the performance of an operation, and also by the enlargement of mind which always results from the contemplation or employment of ingenious and useful inventions.

But the part of the exhibition to which I attach the greatest importance is, those machines by which the more onerous operations of husbandry are performed, and the labour of the husbandman is economised and held in reserve for more important operations. Thus, the time and the labour saved by the thrashing machine, the reaping machine, and the steam plough, will facilitate the execution of other works of great importance to the farmer, but which have often been either wholly held in abeyance, or imperfectly performed. This may be illustrated by a reference to the employment of the American "harvester," as it is called there, or reaping machine. I estimate that the universal use of this machine will, on an average, shorten the period of harvest at least a week. That week may be of the utmost importance to the next crop of wheat, by enabling the farmer so much earlier to get the seed into the ground. The same may be said of the steam plough; which I rejoice to find has at length so far been brought to a practical bearing as to insure its ultimate success. It is impossible to estimate too highly the importance or value of the time that will be saved by this machine, at periods when hours are worth days, and days are worth weeks, according as the weather is favourable or otherwise. I must not enlarge upon this subject, but will leave it to your readers to apply the same principle to *all* the improved machines by which the time and labour of the husbandman are economised, and the more important operations of the farm facilitated and shortened, so as to lessen the risk and increase the probabilities of success.

With regard to the exhibition of live stock, it was equally successful with that of machinery; the perfection, indeed, to which the various breeds have been brought is wonderful, and might well excite the astonishment of our neighbours from across the Channel. I was glad to find that they so far appreciate the principle on which the British breeders conduct their business, as to indicate an intention of following their example. In the breed of sheep, for instance, whilst the object of the British flockmaster has been to produce *meat*, that of the French has been to produce fine *wool*. They find, however, that whilst we attend to the carcase of our sheep, a good fleece also follows as a matter of course; and that, whilst in looking only to the quality of their wool, they require four or five years to bring their sheep to a fitness for the butcher. Our British farmers have theirs at maturity at two years old, and even at one year are sometimes fit for the butcher. The purchase of the best Southdown ram exhibited, from the flock of Mr. H. Overman, of Weasenham, by a Frenchman, on account of a French National Association, at the price of £150, shows that they begin to see their error, and to appreciate the principle on which the British flockmaster acts; and, what is still more important, that *price* is no object when set in competition with perfection of symmetry. I sincerely wish our Gallic neighbours all the success they desire in the introduction of the new system in the breeding of sheep and cattle.

Of the exhibition of live stock generally, on this occasion, it is impossible to speak too highly. That of horses especially proves that in the eastern counties the value of a good breed is properly appreciated, and that no pains or expense are spared to procure it. In this respect, I consider the Chelmsford Meeting excelled all that have gone before it, and I trust will be a pattern to all similar societies throughout the kingdom. Some of these, especially in the West, have paid but little attention to the breed of horses; and when at Yeovil, last month, I really thought the show of horses was far below what it should have been; and yet there is no animal that pays better for a close attention to breeding and rearing.

I may perhaps address you again on this subject.

Yours, &c.,

21*st July*, 1856. AN OLD NORFOLK FARMER.

MR. SANDAY'S ANNUAL LETTING OF LEICESTER SHEEP.

The annual letting of the Holme Pierrepont rams, the property of Mr. Sanday, the distinguished breeder of the Leicesters, who carried away the chief honours in that department at the recent Universal Concourse in Paris, came off on Wednesday, the 23rd inst., in the fold-yard at Holme Pierrepont, under the auspices of Mr. Strafford, and attracted one of the most brilliant and business-like companies we have lately seen collected together in this part of the country. Amongst the gentlemen present were the representatives of several noblemen—the Marquis of Exeter, the Earl of Warwick, the Earl of Shannon, &c., &c., as also of C. W. Packe, Esq., M.P., Captain Inge, &c. From Ireland we noticed Messrs. George Thunder, of Kingston Lodge, Navan, Meath; Richard W Reynolds, Killynon, Killucan, Westmeath; — Mead, County of Cork; Biddle; Hurlston, &c., as well as most of the leading breeders of this class of stock, from Beds., Leicester, Northampton, Notts., Warwick, Yorkshire, and other counties.

The sheep, which included those shown at Paris, were necessarily the main objects of attraction, and comprised some of the handsomest animals Mr. Sanday has hitherto brought forward. They consisted of 20 shearling rams, 16 two-shears, 13 three-shears, and 6 older sheep; in all 55 tups of sterling quality both for wool and mutton, and bearing all the well-known characteristics of this celebrated breed, in the production and improvement of which, Mr. Sanday, by the attestation of all the recent awards of public prizes, stands foremost.

In addition to the sheep, he also submitted on this occasion, through Mr. Strafford, who has acquired so just a celebrity in this department of business, a few choice pure-bred shorthorn bulls, bred by himself; and we are well warranted in stating that Mr. Sanday is likely also to cut an excellent figure in the establishment of a first-rate herd of shorthorns. He is now using a bull of Mr. R. Booth's, having recently also had Harbinger, 2nd Duke of Bolton, and Vatican, the prize bull at Lincoln, and is sparing no pains to bring these animals to perfection; and they were very much admired by several eminent judges present.

At one p.m. the numerous and respectable company partook of luncheon in the out-houses; Mr. Torr, of Riby, presiding over this elegant and substantial display of Mr. Sanday's hospitality. On the removal of the cloth,

Mr. TORR rose and said that, having the honour to be their president that day, he felt quite sure that when he asked them to drink a bumper to the health and success of Mr. Sanday, they would all unite in doing so with enthusiasm (cheers). Were he to speak of Mr. Sanday as he ought, he would have much to say in his praise; but he should only dwell upon his character as that of an upright, honest man, "the noblest work of God" (applause). As a man, as a gentleman, and as a breeder of stock, Mr. Sanday had only one object in view, and that was to give them (the company) entire satisfaction (applause). Those principles, when acted upon, were better than any bond of security they could obtain (cheers). As an Englishman, he felt proud therefore in proposing to them "The health of Mr. Sanday," hoping they would drink it with all the honours they could bestow. (Three times three.)

Mr. C. **Stokes** rose likewise to propose a toast, with the greatest pleasure, for he was quite sure they would all join him in drinking the health of the chairman, Mr. Torr (Cheers). As an agriculturist he was well known in this country, and had made himself equally well known in Paris and other countries, and they would not well discharge the duties of this occasion if they did not drink his health (great applause).

Mr. **Torr** expressed himself extremely obliged to them, and assured them that he trusted, by his endeavours in every relation of life, to deserve their good opinion, although all were liable to error. He trusted also that they would continue to meet for many years to come, and that their friendship would never be lessened.

Mr. Strafford, at 2 p.m. precisely, opened the letting by presenting in the ring the Shearling No. 20. In a short prefatory address he requested their attention, as being about to proceed to business. He would not trouble them with many remarks. The sheep would be put up at ten guineas each, and, with that exception, there would be no reserve. They all knew Mr. Sanday, and were as well aware as himself of his character as a breeder. He had not exhibited this year at home, for what reason he (Mr. Strafford) did not know; but that was probably all the better for those who did. The character of the stock was as well known to them as to him. The shepherd reminded him that after the two-shears the sheep, although they had had a small bit of cake, had been running along with the beasts and had no clover. The letting then commenced in the most spirited manner, and was continued backwards through the different classes of sheep. The first shearling let (No. 20) was knocked down to Mr. Lovell Cowley at 22 gs., the second at 37 gs. to Mr. Reynolds, to go to Ireland, and the third (No. 18), let to Mr. Simpkins, ran as high as 76 gs. No. 17, let to Mr. Sayer at 46 gs.; No. 12, let to Mr. Hurlstone at 25 gs.; No. 2, let to the Marquis of Exeter at 20 gs. The highest-priced two-shear (No. 14) was let to Mr. Dixon at 71 gs.; No. 6, let to Mr. Brown at 40 gs.; No. 1, let to Mr. Singleton at 22 gs.; No. 7, let to Mr. Hurlston at 21 gs.; No. 15, let to Mr. Wedge, at 24 gs. The others ranging from 20 gs. to 11 gs. each. The aggregate of forty-seven sheep let being 948 gs., it follows that the average of each is fully £21 3s. 6d. There were, as usual, when we left, a great many demands for the unlet sheep by private contract, and we have no doubt that the whole would be advantageously disposed of.—Abridged from the *Notts Guardian.*

SALE OF MR. JOHN MOORE'S RAM STOCK, AT LITTLECOTT, WILTS (F. ELLEN, OF ANDOVER, AUCTIONEER.)—This event, which took place on Monday last, attracted a very large number of purchasers from every part of the country; the celebrity of the stock, and Mr. Moore's reputation as one of the first ram breeders in the kingdom, combining to invest it with no ordinary degree of interest. Mr. Moore has for upwards of twenty years supplied many of the leading flockmasters in the South and West of England, and also in other parts of the country (including His Royal Highness Prince Albert) with rams, having spared no pains to bring the stock to its present unequalled state of perfection, and has gained at twenty of the principal Agricultural Shows upwards of 200 prizes for stock exhibited by him. The flock was in good condition, and as the lots were penned excited great admiration amongst the gentlemen assembled, who were eagerly examining and discussing the merits of the various animals. The business of the day commenced with the sale of ram lambs, the result of which was highly satisfactory. The highest price for a pair of Hampshire down ram lambs was 50 guineas, purchased by Mr. T. Simpkins, of Ablington, Wilts. A pair of Southdown ram lambs were sold at 31 guineas to Sir Archibald Macdonald, of Liphook, Hants: another pair made 26 guineas. Fifty pair of ram lambs averaged over £13 a pair. Sir Archibald Macdonald purchased two 2-tooth rams at 25½ and 23 guineas respectively; one other was sold to Mr. T. Simpkins, at 24½ guineas. Mr. R. Blake, of Grittleton, Mr. W. Kilmister, of Fittleton, and Mr. Stephen Mills, each purchased one at 21 guineas, and another was sold to Mr. Thomas Bessent, of Blandford, at 18 guineas. Fifty 2-tooth rams averaged 11 guineas each. A 4-tooth ram purchased by Mr. W. Gulliver for Mr. T. Saunders, of Watercombe, Dorset, at 52 guineas; but in consequence of the number of lots, the lateness of the hour would not allow of the whole of the four and six-tooth rams to be submitted to auction, and were therefore reserved for the sale which is to take place on Friday, 15th August, when the whole of the valuable flock of ewes, together with 40 young ram lambs, will be sold. Upwards of 200 of the stock ewes (of all ages) were exhibited in the sale ground on Monday, and a finer lot has been rarely seen.

THE BABRAHAM TUP SHOW.

Whether we consider this annual reunion as a mere sale of animals remarkable for their extraordinary qualities, or whether, viewing it from a more extensive range, we speculate on its influence upon the march of agricultural progress, we are forcibly led to look upon it as an event of great importance, and one which, owing to the more and more extensive proportions it yearly assumes, is likely to become a new source of honour, a fresh title to that pre-eminence which British agriculture has gained over that of the whole world.

The success of these annual meetings at Babraham is not the ephemeral result of a fleeting celebrity such as we daily see in the world: it has already become a time-honoured event, looked upon long beforehand, and attracting an ever-increasing throng of eminent agriculturists. This was the thirtieth successful return of the day.

Jonas Webb's progress has been a steady movement; he has won that battle which all of us fight with the world to gain that goal of all our efforts, the favour of public opinion, by the most strenuous efforts, as persevérant as they were successful. His victory is not the result of intrigues, underhand influence, or favour: it is the prize of long years of upright industry, and the never-flagging exercise of the most extraordinary judgment and keen observation; and his triumph (for we cannot call the prosperous position which he has attained by a more appropriate term) possesses that great feature, that, as far as our experience goes, as deep as our intimacy with him and his friends reaches, we may say, and we believe all will join us in saying, that a success less darkened by the envy of the world never crowned the career of any man.

Daily experience teaches us that, as soon as an individual, in whatever sphere of life he may move, rises to a higher level, he becomes at once a marked man to the worst feelings that can sully the human heart. Envy prowls about him in the dark, follows him like his shadow, and, ever watchful of opportunities, seizes upon the most trifling incidents of his life, public or private, to becloud his fame or diminish his success. This common fate of all men of note has not been the lot of Jonas Webb; his character of uprightness and integrity, the humane disposition of his heart, that high sense and keen appreciation of what is just and right, which has ever been the rule of his life, have raised him so far above the reach of envy, that everybody rejoices at his success, and points out to him as an honour to the community in the midst of which he rose, and to the agricultural body of which he is so distinguished a member.

A large number of agricultursts honoured Babraham with their presence. The French Emperor, represented by M. de Sainte Marie, the able manager of the late Universal Paris Agricultural Exhibition, was in the lists, together with several French breeders and landowners, and it is a very significant fact that the three tups that made most money were knocked down to Frenchmen. No one can fail to perceive that the most striking feature of the show was to see foreigners, among whom the agent of no less a personage than the Third Napoleon himself, contending with British noblemen and farmers for the acquisition of the Babraham stock. It shows, in the first place, in what esteem and repute Jonas Webb's flock is held, not only among ourselves but among other communities abroad; but it illustrates also that broad principle of impartiality which Nature inculcates in no more forcible manner than in agriculture, by the ever-justly retributive award of her favours in the exact proportion of the real merits of those that court them. In like manner, the Babraham sale ring is a peaceful arena, where kings, emperors, noblemen of all ranks, commingle with the humblest shepherds, on terms of the most perfect equality—the hammer of the auctioneer knows no distinction—the last bid of the herdsman outweighs that of the Emperor, and it is only to the more spirited of the two that the palm of victory is awarded.

The average of the letting was a great deal higher than that of last year, being £33 1s. 4½d., to £25 15s. 2d. in 1855; and on this happy result we sincerely congratulate our friend. But we beg also to congratulate him on another feature of his success, which to us, and to him no doubt, is of far greater importance, and that is, that he does not seem yet to have come to a standstill in his breeding. What appeared to us in former years as the very acmé of excellence, never to be surpassed, sinks into comparative mediocrity when remembered, by the side of his new produce; and it can be no slight compliment to him to know that, prepared as his company were to see good sheep, the general excellence of this year's exhibition was a theme of admiration to all, and wonder to many.

After the business of the day had been disposed of, the company adjourned to a shed most tastefully decorated, under which a large number of gentlemen partook of a substantial repast. We regretted not to have seen there, on the principal table, the splendid silver candelabrum sent to Jonas Webb by the French Emperor—a more fitting ornament could not well be imagined, inasmuch as the distinguished donor had been the highest bidder at the show. This would have reminded the company that Jonas Webb had in some measure dealt on equal terms with a crowned head; that the majesty of the English homestead, the royalty of the British harvest field had exchanged civilities with the majesty of kingdoms and palaces; for he of Babraham and he of the Tuileries have made to each other a present, the one right worthy of the other, the value of which is greatly enhanced by the respective high position of the two donors, and the novel circumstances in which that exchange was made reflecting credit and honour to both.

We were rather disappointed to observe that the after-dinner arrangements as to toasts and speeches were so little adapted to an agricultural gathering. Plenty pertaining to the Queen, Army and Navy, Bishop and Clergy, Lord Lieutenants, distinguished foreigners, and, in fact, the old routine of constitutional and loyal toasts, upon which the eloquent Chairman indulged in rather over-stretched oratory; but of agricultural men and things scarcely a word; so that many had to leave before the toast of the evening, the health of Jonas Webb himself, had been responded to. We believe this to be a mistake, which if remedied would greatly enhance the otherwise attractive character of the essentially agricultural meetings at Babraham.

As to ourselves, we shall ever remember the pleasant associations which these annual gatherings never fail to leave in our mind. The loyal speeches notwithstanding, there always is in our opinion a genuine warmth of hearty good will and benevolence, all to all, in these agricultural feasts, floating upon the air which one inhales, beneath the rustic rafters of these homely temples of British hospitality.

The number of sheep penned were as under :—

Five years old—Three, started from 10 to 40 guineas, the clips weighing from 8 lb. to 8 lb. 8 oz.

Four years old—Seven, put up at from 8 to 25 guineas; clips, from 8lb. to 10lb.

Three years old—Seventeen, valued at from 11 to 50 guineas; clips, 6lb. 8oz. to 10lb.

Two years old—Thirty-three, put up at from 8 to 80 guineas; clips, 6lb. to 10lb.

Yearlings—Sixty-four, run in at from 6 to 50 guineas; clips, 6lb. to 9lb. 2oz.

Of these 77 were run into the ring and disposed of. The letting commenced about 2 o'clock, and some of the best tups soon changed owners for a brief season. The first (No. 11) was knocked down to M. Allier, and, after a spirited bidding, for 93 guineas, having been started by Mr. Webb at 40 guineas. The third tup excited vigorous competition, and was secured by Lord Chichester for 130 guineas, having been started at 80 guineas; the clip of this sheep was 8lb. 12oz. The next also fell to the lot of M. Allier, on behalf of the Emperor of the French, the price being 131 guineas; this sheep was run in at 80 guineas, the clip being 8lb. 12oz. The biddings were sharp and quick for the premier sheep, from 80 guineas (he was a two-year-old) up to 120 guineas, but at this long price some of the competitors retired, and they gradually fell off, till M. Allier was almost alone in the field, so far as bidding was concerned. The total produce of the sale was £2,546 5s. The dinner afterwards took place, at which about 250 gentlemen were present, the chair being occupied by the Hon. E. T. Yorke.

MR. MECHI'S ANNUAL GATHERING AT TIPTREE.

Extremes often meet, and we appear at length to be approaching such a consummation on Tiptree Heath. Is it the matter-of-fact farmer gradually warming up to the due pitch of enthusiasm; or is it their great teacher who is sobering down? However much the agriculturist may have advanced within the last year or two, it is very certain that within the same period Mr. Mechi has considerably modified his tone, if not his opinions. We no longer listen to those wholesale diatribes against his pupils—their stupidity, their ignorance, their apathy, and so on. We are called to believe no longer that everything in practice on Tiptree is right, while it is as assuredly wrong everywhere else. Mr. Mechi is now, at an agricultural meeting, an altered and a wiser man. A great deal of the wild and visionary has disappeared. He has been himself to school, and learnt to appreciate the efforts of those he was wont ere this to regard with so little consideration. He is, in a word, day by day becoming more of a farmer and less of a mere experimentalist. He has even gone so far as to give up his annual display before the much-admiring members of the Society of Arts. He directs his addresses now more immediately to those with whom this later object in life has associated him. A regular attendance at the monthly discussions of the London Farmers' Club, generally an autumn tour, with an appearance at one or two of the local meetings of that season, and a close attention to the agricultural literature of the time, have caused him to rely more and more on the judgment of those who were properly qualified to pronounce on what he was doing. The one pet hobby, however, the gathering, that in numbers at least really gathers as it goes, retains much of its original character. The majority of visitors, so far as we may judge from the list of them, are still in a strong majority over those culled from the ranks of agriculture. Hospitality has, indeed, its triumph; and crowds of people come to learn farming "taught in one lesson," and to enjoy the good things so bountifully and so tastefully spread before them.

This annual gathering took place on Saturday, the 19th of July, the day immediately following the conclusion of the Chelmsford meeting. However much we may incline, from personal motives, to regret a fixture coming as it does so inconveniently at the finish of so busy a week, we cannot but confess that the opportunity was in this instance too good to be lost. We should have hoped to have heard of all the eminent men associated with the advance of agriculture pursuing their journey still more eastward from Chelmsford, to Kelvedon. We have reason, though, to believe that such of these as did go timed their visit for a bye-day; and so the show company shone on Saturday with Dons, Knights, Counts, Colonels, Captains, County Magnates, Professors, and Savans of all sorts, M.P.s of all opinions, and another imposing array of Civic dignity, prepared to do due honour to their new chief in a manner so congenial to their own habits and abilities. To be sure, longo intervallo, we come across the more familiar titles of W. Fisher Hobbs, W. C. Spooner, T. B. Elvey, S. Druce, and a few more one might be prepared to follow with some confidence in their history of the day's proceedings. Fancy, though, taking Alderman This' opinion of the mangels before he had tasted them, or Mr. Sheriff That's judgment on the little pigs without they were roasted.

The addresses at the dinner which followed the round of inspection were almost as much out of place, and altogether ignored the business of the day. The speakers included Colonel Sykes, Captain Peel, Count de Kergorley, Mr. Fisher Hobbs, the Honourable Mr. Cameron (from Canada), Mr. Ball, M.P., and Alderman Wire. Not one of these spoke to what they had just seen. Mr. Hobbs and Mr. Ball—the only two who could, perhaps, have done so with any authority — confined themselves to the toasts with which their names were coupled; Mr. Hobbs answering for the Royal Agricultural Society, and Mr. Ball giving "The Ladies." Indeed, the only one who talked of farming as a practical business was the worthy President himself; and he did it in this wise, beginning *àpropos* of statistics:

"Recollect you cannot do away with the farmers of England; and you cannot keep them humble. Every day their increasing intelligence and opportunities of intercommunication give them increased power. Very well, then, gentlemen, do not let us be afraid of letting the world know that we are making a profit, for I am certain if we were to say we are all bankrupt nobody would believe us. After all that I have said to-day I am not going to detain you at any length, but I think we are all agreed upon this—and I take the honour of your presence to-day, representing, as this numerous assembly must do, a large amount of the wealth and intelligence of the country, to mean—that agriculture shall not stay where she is. To what can I attribute this vast and influential meeting but the spirit of progression? for what else could have caused gentlemen to come here from enormous distances and at great personal inconvenience? They did not come for a dinner; but they came to lend their countenance and aid to agricultural progression, that this country may be stronger than she is now, and that her wealth may redound to her honour. We have all sorts of physic in this country, and I believe we have several doctors in this tent, but I wish I could find a physic that would cure prejudice. The complaint is not confined to agriculturists. I hope that my agricultural friends will not think that I look upon them as the only class afflicted with it. What do we recollect of our greatest discoveries? That steamboats could not answer, that gas would never do, that railroads were impossible, and the electric telegraph madness. These are all evidences that the complaint of prejudice is not an agricultural complaint only. There is another point—and I am happy to see the ladies present, because I believe the time will come when the ladies will not be shocked to be told that the beef, and mutton, and bread, the thousands of oxen, the ten thousands of sheep, and the millions of quartern loaves which annually flow into London, shall some day flow out of it again upon the land which produced them. Why is the land of England poor, but because we are always taking out, without bringing back?—and I do say that when the public mind wills that what we send of our produce to the metropolis and other great cities shall be sent back again, the land of the country will be no longer poor. That is what we must come to; and when I hear the steam engine at work in the adjoining field—when I know that the steam plough is ready to be shown to you, and that another remarkable engine which is able to transport itself from place to place would have been here but for an accident on the road—not to the machinery, but to one of the axle boxes—I do not despair of advancing further. I foresee the time when the present system of agriculture will be considered an old-fashioned one; and when I viewed the splendid horses at the Chelmsford Show, I felt that their days were numbered—that a stronger horse than they is coming, and that, as far as farming is concerned, we shall be enabled in a great measure to dispense with them. The time is coming, and I only say in few words—'Forward, England, as an agricultural country.' We must spend more money upon fewer acres; or, if we do not like to diminish our acres, we must borrow money to put upon them. As farmers multiply, I want to know what we are to do with them unless we cut our lands in half? I will only call your attention to one other point. It seems extraordinary to me, with the multitude of associations for employing other people's money in almost every kind of undertaking, that we have scarcely anything of the kind in agriculture. We have other incorporated societies by the score, but where shall we find half-a-dozen incorporated Agricultural Improvement companies? Is agriculture too proud to accept such assistance? When I speak of permanent improvements and putting up new buildings, I am sometimes asked 'Where is the money to come from?' My answer is, You have never asked for it."

It is satisfactory to know that the farmers of England cannot be done away with. How long is it since we were told, not a bushel of corn need be grown here? It is consolatory to find at last that the farmers are not the only people liable to prejudice; but is it not rather a far-fetched deduction, to make such a heterogeneous assembly, with so sparing a sprinkling of the genuine article in it, answer for the advance of British agriculture?—with Alderman This putting his shoulder to one wheel, and Mr. Sheriff That to another.

There appears to have been no especial novelty on this occasion. The Italian rye-grass received its customary shower-bath of liquid manure; the sheep and cattle sheds were duly expatiated on; while the crops spoke more directly for themselves. The wheat and mangels were pronounced to be generally excellent, some especially good, and the farm altogether in famous condition. The reason for all this satisfactory improvement we take to be that with which we started—Mr. Mechi is becoming daily more and more of a farmer, and no longer looks down on his brother-farmers. He appreciates their "intelligence;" and we fancy the more he studies and understands them, the better will it be for Tiptree and its returns.

Few of those but who have been present at one of these gatherings can picture the magnificent hospitality which characterizes the day's festival: the lunch to begin, and the cold dinner—almost unequalled for tasty arrangement and luxurious profusion—to conclude the promenade. Let the gratified reporter of the *Essex Standard* speak for himself.

"The dinner: This part of the day's proceedings, although the host modestly rates it as an appendage only to the business objects of the meeting, *was undoubtedly a very popular feature.* Under a couple of large tents pitched side by side, an elegant cold collation, all cooked upon the farm, was spread, and a corps of waiters from the London Tavern, under the direction of Mr. Funge, one of the principals of that establishment, attended to the wants and wishes of the guests. The dessert included pines, grapes, melons, nectarines, &c., &c.; and the wines comprised Moet's Champagne, Moselle, Hock, Sherry, Port, St. Percy, Claret, and Burgundy. The musical arrangements were under the direction of Mr. Turner, assisted by Messrs. Genge, Ransford, and Perren. Mr. Harker was toast-master."

What a harvest home in anticipation to Tiptree's heretofore barren acres! Pines, melons, nectarines—Moet's champagne, Moselle, Hock, and Burgundy—Mr. Funge from the London Tavern, and Mr. Harker as toast-master! Bravo, Mr. Mechi! If he does not turn out an extraordinary farmer, he will make a wonderful alderman!

THE LATE GREAT MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

The Chelmsford Meeting may be numbered among one of the most successful the Royal Agricultural Society ever held. It possessed many interesting features which its predecessors had not, and the progress which it serves to test may be pronounced to have been conspicuous and well defined.

In the first place, we do not remember ever seeing so complete an exhibition of implements, and one that was disparaged by so few of those useless toys that tend only to display ingenuity of design and engineering skill, but no practical utility to the farmer. Indeed, there seems to exist amongst our agricultural implement makers a noble rivalry—far above the selfish consideration of mere pecuniary profits. They appear to vie with one another, not about who shall make the most money, but who shall appear before the world as the inventor of the greatest improvements—as the manufacturer of the cheapest, most simple, and most efficient implement. We say it in all sincerity of conscience, our implement makers have well deserved of the agricultural world: they have kept pace with, nay, accelerated the movement of progress, and taken a conspicuous place in the vanguard of that glorious band of English agriculturists who have added fresh lustre to the fame of Old England, and as it is already the home of peace and liberty, the home of industry and prosperous commerce, are striving to make it the home of agricultural plenty.

The show of animals was also very remarkable. Considering the great export movement so characteristic of this epoch in the history of English agriculture, it would be an unreasonable grumbling on our part were we to find fault with the number and general quality of the stock. Such animals as Lord Walsingham's sheep, such specimens of shorthorns as Master Butterfly, Mr. Ambler's old bull and bull-calf, Mr. Towneley's cows and heifers, and especially Mr. Richard Booth's heifers, are sufficient to stamp with greatness any exhibition. And, moreover, we may say, in perfect justice, that in the memory of those who were attendant at all the meetings of the Royal Agricultural Society of England, better animals were never shown. The Devons were remarkably neat and good, and so were the Herefords. In our report of the Paris Show, in contemplating the small and feeble number exhibited, we had exclaimed, What are the Hereford men about? We must confess they have given us a proper answer at Chelmsford; for, although their animals might have been excluded from competition at Paris, we, who in this country are great lovers of good meat—highly appreciated the quality of their flesh, and the even tone of their condition.

In the sheep classes we met our old friend Jonas Webb again. Certainly no one who has the good fortune of being acquainted with him is ever sorry to meet him anywhere; but on this occasion, holding the position he does, we strongly question the soundness of the policy that prompted him to enter once more the field of competition. The world has yet to knew the conqueror that never suffered a reverse; there are, in the course of a competing career, so many unforeseen circumstances, so many little stumbling-blocks, which in our triumphant course we are too apt to overlook, and which, their insignificance notwithstanding, acting on the lever of our greatness, make us trip and fall: that according to the vulgar wisdom of the world we feel inclined to condemn our friend, and tax him with rashness. However, the old adage, "'Tis an ill wind," &c., somewhat consoles us for this check, because it will no doubt stimulate him to still greater exertion. He is now pledged to carry on the battle; and when such a man is impelled by so strong a motive, we may reasonably expect greater things from the impending contest.

Now, a word upon the judgment which has created so great a disappointment to Mr. Webb and his friends. It is almost invidious on the part of any one, and especially on that of an editor, to pass a censure upon the decision of honourable men; proving, by the very fact of their selection, that they enjoy the Society's confidence. There is not a shadow of doubt that these gentlemen performed their duty with the most unbiassed exercise of their judgment; but uprightness and integrity are not alone requisite to qualify a man for so responsible an office as that of a judge in so important an exhibition as that of the Royal Agricultural Society. There must be competency—that is to say, a thorough practical knowledge of the thing to be prized. For instance, we would place the most implicit confidence in the judgment of such men as Jonas Webb, Rigden, Lugar, &c., in respect to Southdown sheep; but we must own we should value infinitely more the opinion of such a man as Wm. Sanday for the Leicester breed. We should have great faith in Quartley's or James's decision as to the respective merits of Devons; but we should much more readily accept the opinion of shorthorn breeders or Hereford men, as regards those breeds respectively. Most men have their own peculiar ideas as to merit—some like size rather than symmetry; many look to the wool, others to the flesh; so, after all, there is no infallibility in the verdict of agricultural judges. But there is, undoubtedly, a solemn duty, that, perhaps more imperatively than any other, devolves upon the Council of the Society; and which is, to select for the judges well-tried men, who can boast of something besides uprightness and impartiality—viz., a thorough and practical knowledge of that class upon the merits of which they are selected to pronounce.

We have barely space for the horses; and yet, if we were to decide between all the various branches of this exhibition, great and good as all were, we should feel inclined to award the palm of excellence to this remarkable class. The details given elsewhere will afford our readers a sufficient idea as to numbers; but as to quality, no words of ours, however graphic and forcible, could convey an adequate idea. We are pleased to record this immense progress in the Society's exhibitions, and we feel in justice bound to ascribe a great deal of this success to the local grant of extra prizes. It is a remarkable fact that good horses are scarce, and that in this county, so famed for its breed, the same amount of care and anxious solicitude to perpetuate and improve their qualities, and elevate English horses to their acknowledged pre-eminence, is not observed as it is in France and Germany. In those countries a very remarkable improvement has taken place. The estalishment of *haras*, or *depôts*, of the best stallions that can be found, in various parts of the country, and in such localities as are easily accessible to a given district, has been attended with the best possible results; and at this moment France can boast of several breeds which, as cart-horses, are second to none in the world for endurance, strength, and activity, if not for the more showy points of bulk and symmetry. We were pleased to see two very good specimens of the Bolognese breed at Chelmsford: every one admired their trotting action, combining speed with manifest power.

We naturally come now to the foreign portion of the exhibition. Unfortunately it was hardly important enough as to numbers to enable us to venture an opinion; all we can say is, that from what we have seen in France, and what we have observed at this exhibition, we are decidedly of opinion that whatever may be the claims of French breeds, English agriculturists have nothing to borrow from them, and therefore we can only consider the establishment of this novel feature of the Society's exhibitions as an amiable attempt to pay a compliment to our neighbours; as to reciprocity, there is absolutely none: viewing then this part of the proceedings merely as a matter of courtesy, possessing no serious character whatever, we will at once notice something of more import—we mean the numerous transactions which have taken place in the show-yard.

Among the incidents that will render this exhibition remarkable—and there are more than we can dwell upon—the sale of the first prize bull Master Butterfly for the unprecedented large price of 1,200 guineas is certainly the most extraordinary. Except within the last few years, the only competition for our best animals in the far-famed Short-horn breed stood between our own breeders and the Americans. Now two new and anxious parties have come into the field—the French and the Austrians; the former with their newly-awakened anxiety for agricultural progress, the latter with their powerful long purses, and that eager desire to acquire the best at any cost whatever. There is not a shadow of doubt that these two new competitors in the English neat stock market will be followed by others. We are in a position to give weight to this assertion, and the inevitable result of this will be that the demand will be greater than the supply. Short-horn men, bear this in mind! Those among you who have money and judgment, combined with a love of the thing, ought now to begin in earnest to store your stalls with good produce, and prepare for that great market which casts its shadow before in so remarkable and unmistakeable a manner. A gentleman, whose name has long been connected with what we may call the spirited breeding of shorthorns, was telling us but yesterday that he should resume his operations when corn had fallen to 40s. a quarter: we can however tell him that when this comes, it will be too late; and fortunate are those who now possess on their farmsteads the precious elements of a good herd.

We can hardly conclude this article without complimenting the Chelmsford local committee and the inhabitants generally for the felicitous manner in which they have tried to welcome their numerous visitors. Let us especially congratulate the Royal Agricultural Society for this successful Eighteenth Anniversary of the Oxford Exhibition. The progress achieved in the application of steam to agricultural operations has under its auspices made the most wonderful strides. Cultivating by steam, if not yet perfect, may be pronounced to be no longer an impossibility; the problem of the reaping machine is solved; an extraordinary impulse is given to all the branches of agricultural interests; and it manifests itself by efforts and creations, achievements and triumphs, such as were hardly ever anticipated by the most sanguine amongst us a few years ago. Surely this is cheering for the farmer, and hopeful for the future. All seem unanimously bent to the same goal—all party divisions appear to be forgotten, and all energies are harmoniously united to procure happiness and plenty, perfection and prosperity.

CALENDAR OF AGRICULTURE.

This is the harvest month of the Southern half of the United Kingdom; in the Northern parts it is protracted during the whole of next month. Grain crops are beneficially cut ten days before full ripeness takes place; the straw will be more juicy, and the flour will be whiter and more doughy. Wheat is mostly cut by hand-sickle, placed in shocks of twelve sheaves, and built in ricks. Oats and barley are mown by scythe, or by a reaping-machine; carried loose, or bound into sheaves some days after being mown. Peas are cut by hand-sickle, and laid into heaps. During fine weather, no pains nor expense must be spared in securing the crops; hire sufficient labour, and allow plenty of beer to the poor workers. A sparing parsimony in harvest, is the worst-judged economy that can be imagined.

Clean thoroughly by scuffling and hand-hoeing all drilled and root crops; earth-up potatoes, and pull by hand any tall weeds that may afterwards arise.

Lay lime, and dung, and composts on wheat fallows; harrow the lime into the ground, and cover the dung by ploughing, both operations of ploughing and dunging going on together, or following each other as quickly as possible. Continue draining, the folding of sheep, and the soiling of horses and cattle in the yards.

Keep the lambs always in forward condition by giving them the best pastures. The drafted flock of last year will now be ready for the butcher, and ewes may be put to the ram for early lambs.

Sow, in well prepared borders of ground in warm and sheltered situations, the seeds of drum-head cabbages, kohl rabi, savoys, and broccoli, for plants to be used next spring. Sow rye and winter vetches for early spring use. Apply dung to the vetches, or, what may be better in many situations, summer fallow the land, using dung at the same time, thus adopting every possible means of obtaining the valuable crop of vetches. This direction applies to inferior land and high situations.

Prepare every kind of artificial manures for the drop drill. Gather dung of all kinds, earths for composts, and vegetables for the liquid manure pit. No person will ever do much in farming who does not apply manures with a constant, a lavish, and an unsparing hand.

METEOROLOGICAL DIARY.

BAROMETER.			THERMOMETER.			WIND.		ATMOSPHERE.			WEATH.
1856.	8 a.m.	10p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
June22	30.02	30.03	54	68	55	W. by S.	gentle	cloudy	fine	fine	drops
23	30.12	30.28	52	66	55	N. by E.	calm	cloudy	cloudy	fine	dry
24	30.25	30.21	50	69	62	Westerly	lively	cloudy	sun	fine	dry
25	30.22	30.26	56	75	68	W. by North	airy	cloudy	sun	cloudy	dry
26	30.27	30.27	56	80	67	W. to S.	gentle	fine	sun	fine	dry
27	30.29	30.14	63	79	69	S. West	gentle	fine	sun	fine	dry
28	30.14	30.21	63	77	59	N. by West	gentle	cloudy	sun	fine	dry
29	30.34	30.27	48	73	58	W. by North	gentle	fine	sun	clear	dry
30	30.16	30.16	48	77	60	Every way	fresh	fine	sun	cloudy	drizzle
July 1	30.23	30.23	52	75	56	E. S. E.	airy	fine	sun	fine	dry
2	30.24	30.24	50	69	53	N., Easterly	gentle	fine	sun	fine	dry
3	30.26	30.20	45½	66	54	Easterly	lively	fine	sun	fine	dry
4	30.21	30.10	47	72	61	W. S. W.	gentle	cloudy	sun	cloudy	rain
5	30.10	30.08	53	74	60	W. S. W.	gentle	fine	sun	fine	dry
6	30.07	30.02	57	73	61	W. S. W.	brisk	fine	sun	fine	dry
7	29.84	29.42	53½	65	56	S. West	brisk	cloudy	cloudy	cloudy	showery
8	29.38	29.70	46	55	50	N. Westerly	strong	cloudy	cloudy	fine	showery
9	29.77	29.88	45	67	55	West	fresh	fine	cloudy	cloudy	showery
10	29.95	30.0	46	69	56	West	fresh	fine	sun	fine	showery
11	30.0	30.0	54	70	60	West	fresh	cloudy	cloudy	cloudy	dry
12	29.98	29.87	58	66	58	W. by S.	strong	cloudy	cloudy	cloudy	showery
13	29.95	29.91	52	68	57	S. S. W.	gentle	fine	fine	cloudy	dry
14	29.93	30.07	55	72	62	S. S. W.	var.	fine	fine	cloudy	dry
15	30.07	29.95	57	75	65	Variable.	gentle	fine	sun	cloudy	dry
16	29.85	30.05	54	62	55	Variable.	gentle	cloudy	sun	fine	stormy
17	30.16	30.15	49	69	57	West	airy	fine	sun	fine	showery
18	30.15	30.09	51½	63	58	S. West	airy	cloudy	cloudy	fine	dry
19	30.09	30.06	56	76	66	West	airy	fine	sun	cloudy	dry
20	30.04	30.05	62	70	61	W. by N.	gentle	cloudy	cloudy	cloudy	showery
21	30.05	30.0	58	75	65	N. Westerly	gentle	fine	sun	cloudy	showery

ESTIMATED AVERAGES OF JULY.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.30	29.39	76	42	61

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	At 10 p.m.	Mean of the three
61.3	53.0	59.7	61.3.

WEATHER AND PHENOMENA.

June 22 to 30. Perfectly fine. Some drizzle in the last evening.

LUNATION.—Last quarter, 25th, 10h. 17m. forenoon.

July 1 to 3. Fine weather. — 4. Changeable, smoky clouds.—5. Summer-day.—6. Heavy masses. 7. Cold rain.—8, 9, 10. Showery.—11. Genial.—12. Small showers.—13. Red rays at sunset.—14. Fine.—15. Great heat: thunder storms.—16. Fine intervals: more thunder showers.—17. Fine.—18 to to 21. Improved, but changeable.

LUNATIONS.—New moon, 2nd, 9 h. 30 m. a.m.; first quarter, 10th, 7 h. 22 m. a.m.; full moon, 17th, 9 h. 31 m. afternoon.

Croydon, July 22. JOHN TOWERS.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

On the whole the weather of this month, though not to say very forcing, has been seasonably fine. As might naturally be expected, the state of the crops has been the all-engrossing topic of conversation. Every account, from whatever locality it has emanated, has been read with avidity, and every return showing the imports of foreign produce into the United Kingdom has been regarded with more than ordinary interest. If we make due allowance for some extravagant statements, we may venture to observe that in very few corresponding seasons have we observed less difference of opinion amongst the growers, respecting the prospects of the fields, than during the month just brought to a close. The most unfavourable advices respecting the wheat crop have reached us from counties not purely agricultural; and we feel justified in stating that the return this season will, according to present appearances, be decidedly larger than in 1855, though our expectations do not extend to the wonderful produce of 1854, either as regards quantity or quality. Much, however, must depend upon the state of the weather between this and the close of harvest work: at all events the blooming time passed off well, and the extent of land laid during the late heavy gales of wind was not so extensive as might have been expected. The amount of land under wheat culture is, perhaps, the largest ever known. This is one result of high prices; but that sown with barley is unusually small. The latter crop is looking remarkably well, and has derived immense benefit from the late fine showers of rain. As regards oats, beans, and peas, our accounts agree in stating that they promise a very large acreable return.

Much anxiety has been felt respecting the potato-crop, but we understand that in nearly all parts of the United Kingdom it is looking remarkably luxuriant, and that the tubers have grown well. Very large supplies have already passed into consumption, at low prices. The imports of foreign potatoes into England, during the month, have been about 800 tons.

The stocks of wheat in farmers' hands are evidently reduced to a very low point; indeed, in some counties the stack-yards are nearly empty. The growers, however, have shown some activity to get rid of stock, owing to the prospect of steady imports from abroad, and a good harvest at home. Of course great difference of opinion prevails respecting the amount of our importations; but, when we consider that the southern harvest in the United States has yielded a very large supply of food, and that war has ceased to interrupt navigation in any part of the globe, the chances are decidedly in favour of a very large arrival during the next six months. That wheat has seen its highest range of value, no doubt can be entertained, even though we shall commence the consumption of the new crop with an unusually small supply of old wheat on hand. The stocks of English barley, oats, beans, and peas are nearly exhausted. The former article will, we are of opinion, command a high range of value for some time, although wheat will be drooping in price.

The greater portion of the hay crop has now been cut and carried within a circle of 40 miles round the metropolis. The quantity is, perhaps, the largest grown within the last 30 years. Old hay, however, is very scarce and dear. The growth of clover is proving large, and a large quantity has been secured in fair condition.

The activity in the wool trade has received a check, owing to the unusually large importations of wool from our colonies, the immense supply now offering at public sales, and the fall in prices in some of the leading continental fairs. The decline in colonial qualities is about 1d. per lb., and we have now over 85,000 bales in London. English wools have been tolerably firm, but the demand for them has fallen off; indeed less business has been transacted for shipment to the continent than in any other month of the year.

Numerous fluctuations have taken place in the amount of the hop duty, which has varied from £175,000 to £200,000. The vines are certainly not quite so promising as last year, owing to an increase in vermin; but there is unquestionably a fair prospect for an average growth. A large quantity of last year's hops remain on hand, and some extensive parcels of foreign have been pressed for sale: hence the demand has ruled heavy, and prices have shown a disposition to give way.

In Ireland and Scotland there has been only a limited business doing in the grain markets, and wheat has given way in price. The shipments of produce to England have been on a very limited scale.

In taking a general view of the prospects of our agriculturists, we may observe that there is nothing in the present state of things indicative of low prices. Money, for commercial and other purposes, is cheap and abundant; the consumption of food is enormous; and an active demand must lead eventually to steady prices, even though foreign arrivals may be extensive.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the demand for fat stock generally has not been so active as in the previous month, the trade has continued healthy and prices have ruled high. The unusually small supplies of food produced last year have told materially upon the general weight and condition of most breeds of beasts and sheep. At least two-thirds of those exhibited in the Metropolitan and other leading markets have shown a great deficiency in weight; consequently prime stock has freely maintained former currencies. From nearly all parts of the country we learn that the supply of grass in the pastures is unusually abundant, and that the crop of hay is a very large one. These are most important features at this moment, not only to the producer, but likewise the consumer; but, however large the supply of natural food may prove, recourse must be had to linseed and cake in considerable quantities to meet the immense demand. It follows, therefore, that the cake trade will be a most important one for a considerable period. Some of the graziers and feeders have been under the impression that as we shall receive large quantities of linseed from Russia between this and the end of the year—possibly over 700,000 qrs.—

prices will give way; but they must not lose sight of the all-important fact that the continental feeders are very large customers for the article—the weekly sales in London alone for shipment to France, Holland, and Belgium exceeding 5,000 qrs., exclusive of over 6,000 qrs. of rapeseed—and we have no hesitation in saying that much difficulty will be experienced in meeting the demand.

From our operatives and most other classes being fully employed, and from the rapid extension of our commercial operations, there will no doubt be an immense consumption of meat during the whole of the year; indeed, the prospects of the graziers were never better than at this time. The demand for stock in Holland on French account having been less active, prices in the former country have become rather more moderate, and the shipments to England have rather increased; still they are very moderate compared with some former seasons. During the first six months of the present and past year, the imports into the United Kingdom were, according to the Board of Trade tables, as under:—

	1855.	1856.
Oxen	16,632	9,830
Cows	1,894	614
Calves	8,872	5,265
Sheep	19,232	12,643
Lambs	698	944
Pigs	409	209

There are many serious and glaring inaccuracies in the above return for this year, and if we are to take them as a specimen of the whole document, the sooner such a publication is stopped the better, because inaccurate returns are invariably productive of much mischief. It has been our duty for a series of years to note day by day the actual arrivals as given in the various customs' reports. The authorities have the same advantage as ourselves, and yet they are unable to publish reliable returns. Our sources of information prove that the following supplies were received in London in the first six months of 1856:—

Beasts	10,981	head.
Sheep	28,432	,,
Lambs	4,438	,,
Calves	7,266	,,
Pigs	2,657	,,

If the heads of the Statistical Department will take the trouble to run through the customs' returns, they will at once perceive that we are correct—that they have lost over 16,000 sheep, and a large number of lambs, calves, and pigs. This is not the first time that we have found it necessary to call attention to inaccurate statements issued by the Board of Trade.

The arrivals of foreign stock into London during the month just concluded, were as follows:—Beasts, 3,151; sheep, 16,910; lambs, 3,415; calves, 3,858; pigs, 2,603—Total, 30,537 head.

Corresponding month in 1855, 22,680; 1854, 22,242; 1853, 38,795; 1852, 27,008; 1851, 24,082 head.

The annexed return shows the total supplies of stock exhibited in the Great Metroplitan Market:—Beasts, 18,589 head; cows, 500; sheep and lambs, 135,650; calves, 3,407; pigs, 3,225.

Supplies at corresponding Periods.

	1855.	1854.	1853.
Beasts	16,702	19,740	21,199
Cows	535	540	560
Sheep and lambs	149,470	157,970	169,920
Calves	2,757	4,123	4,315
Pigs	4,000	3,110	2,820

The Norfolk season for beasts has now been brought to a close, and that from Lincolnshire has fully commenced. As yet, the arrivals of stock from the latter county have come to hand in but middling condition, and we learn that future supplies are not likely to be very prime. It is therefore most probable that really good beef will command a high price during the next six months. The same observations may be applied to sheep. The receipts of beasts from Lincolnshire, Leicestershire, and Northamptonshire since we last wrote, have amounted to 5,960 shorthorns; from other parts of England, 6,500 Scots, Herefords, &c.; from Scotland, 810 horned and polled Scots; and from Ireland, *viâ* Liverpool, 605 oxen. It is gratifying to observe that the Irish stock is coming to hand in good condition.

Beef has sold at from 3s. 4d. to 5s. 2d.; mutton, 3s. 10d. to 5s. 4d.; lamb, 4s. 8d. to 5s. 8d.; veal, 3s. 6d. to 5s. 4d.; pork, 3s. 4d. to 4s. 10d. per 8lbs. to sink the offal.

Comparison of Prices.

	July, 1855.	July, 1854.	July, 1853.
Beef, from	3s. 6d. to 5s. 2d.	3s. 2d. to 5s. 0d.	3s. 2d. to 5s. 0d.
Mutton ..	3s. 6d...5s. 2d.	3s. 4d...5s. 0d.	3s. 6d...5s. 4d.
Lamb	4s. 10d...6s. 2d.	4s. 4d...5s. 8d.	5s. 0d...6s. 4d.
Veal	4s. 2d...5s. 4d.	3s. 2d...5s. 0d.	3s. 6d...5s. 0d.
Pork	3s. 4d...4s. 6d.	3s. 0d...4s. 8d.	3s. 0d...4s. 2d.

The supplies of meat on sale in Newgate and Leadenhall have been very limited, and the trade generally has ruled inactive, owing to the prevailing hot weather, as follows:—Beef, from 3s. 2d. to 4s. 8d.; mutton, 3s. 6d. to 4s. 10d.; lamb, 4s. 2d. to 5s. 4d.; veal, 3s. 4d. to 4s. 10d.; pork, 3s. 6d. to 4s. 8d. per 8lb. by the carcass.

NOTTINGHAMSHIRE.

The early part of this week was very fine, and most of the hay and clover secured, that which was secured before Thursday must be in fair condition. Many of the wheat crops had raised their heads, and partially overcome the heavy storms which fell early in the month; but on Thursday afternoon, 24th, we were visited with a very heavy storm of rain with some hail, the latter being very partial, accompanied by vivid lightning and immense shocks of thunder, which continued for an hour; a cessation of 40 to 50 minutes, when again torrents of rain fell for three-quarters of an hour. In many fields the heavy crops had the appearance of having been rolled; now the head is becoming heavy it is to be feared cannot possibly get up again. Some crops of potatoes had a remarkable appearance; where the haulm was strong they were equally flat: this latter crop may not suffer much from this storm, no diseased potatoes have fallen under my notice, yet I hear of many small growers who are already getting them up for sale, and give only a very moderate account of the quality, many being much affected from the wet season. The heavy rains tell considerably upon barley, and oats, beans, and peas never were better, and are expected to produce abundantly. To-day (Saturday) whilst writing this, 12 o'clock, the rain is falling very heavy, with thunder and lightning; wind blowing from sou'-west, which heralds more downfall. Wheat in the hands of both farmers and factors is small; of the former it will be lessened to a mere nothing by the end of the next week. Most who are holders have just now a vacant time to thrash out their last lot, either to clear the stack-yard for harvest or to make a supply of bats, and the price by no means untempting; the prospects of lower prices are too distant to be a fear to the farmer; and the consumer's heart may still be greatly gladdened that more than an average quantity of acres are under wheat cultivation in this country.—July 26.

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF JULY.

The general feature of the past month has been that of a pause, upon high prices, as respects wheat, with the commencement of lower rates at the close. The known shortness of stocks in this country, and throughout the world, seemed to justify holders in availing themselves of the opportunity to secure full prices; and those who were firm have been well remunerated. Our neighbours, the French, till quite recently remained in a very doubtful position, and we ourselves were not assured of a sufficiency up to harvest; but the South of France has already reaped its produce, the west is in full operation, and (weather permitting) it was expected to be general the first week in August, with a very satisfactory result. The inundations which occasioned such apprehensions have not, it appears, very seriously affected the corn-producing districts, the low rich lands which have been flooded being more used in the cultivation of esculents and mercantile produce, such as hemp, flax, &c. The alarm, however, raised such a competition, that it has brought to our shores a much greater quantity of foreign wheat than would otherwise have come to hand, and moderate stores are accumulating in our shipping ports, which serve to place the nation in greater safety, whatever be the result of the speculation. In the middle of August, the southern part of the kingdom, it is calculated, will be in full harvest, and in Ireland the crop, which looks fair, is not expected to be late; but in Scotland, and the northern districts of the island, September will be as early a time for reaping as can be expected.

The great variety of weather experienced through the month has produced a variety of opinions as to the yield. The pens of the sanguine have described glowing anticipations; but, with every wish for a large and abundant return for the grower and the country, we cannot gather that much, if anything, beyond an average will be forthcoming. There was certainly very rough weather about the 8th, which did partial injury to the early pieces in bloom, and many more pieces were laid and twisted. Some defective corns, also, appear upon examination, and the maggot has been detrimentally at work in some localities; but as a whole, with a favourable time, there seems a fair prospect, especially as regards the breadth, the stimulus of war prices having brought much practical energy into play, for the growth of this valuable grain.

In several southern climes the wheat is mostly harvested, as Egypt, Syria, Algiers, Italy, Spain, South America, and the southern parts of the United States. In the two former countries it is well spoken of; in the Danubian provinces, with small exceptions, it is favourable; in Italy and Algiers, especially in the former country, it is held to be very deficient, having suffered from drought (the king of Naples, therefore, on the 15th, prohibited further exports); in Spain it seems but moderate; in America, the great storehouse of the old world, the new Southern wheat is said to be very fine; in Canada there was every promise; in the Baltic a much better prospect appears than last year: so appearances, on the whole, are cheering, as to future supplies. As to prices, it is not to be expected that the present rates will be maintained when the new corn comes in any quantity; and we hold it would ultimately be detrimental to the British agriculturist if they should, for the facilities of foreign growth, in a time of profound peace, are such, that the stimulus of excessive remuneration in these primitive lands might bring a stock of such magnitude as to inflict a serious and long-enduring damage upon the English farmers, whose rents would be raised out of proportion, with a similar result as to labour. Yet very low prices, with trifling stocks of old in store, and the population of our own country and the whole world increasing at an enormous ratio, seem out of the question. Let us hope, then, that the happy medium will be the ruling quotation, to the fair remuneration of the grower and the contentment of the poor.

The first Monday of the month was supplied but scantily on the London market. High winds on Sunday indicated a change of weather, and some wet fell during market, with a boisterous state of the atmosphere. Factors, therefore, were saved the necessity of a decline, which seemed almost certain to ensue on the previous Friday; but millers took samples very sparingly at the old rates, and but a trifling business was transacted. In foreign only a retail trade obtained, at unchanged quotations. The following day was remarkably rough and cold; the firmness of the London market was therefore followed by a rise in several principal places. Boston, Hull, Wakefield, and Lynn were 1s. to 2s. up, and Birmingham, from the shortness of its supply, quoted a decided improvement of 2s. The Liverpool advance was on Tuesday 2d., and on Friday 3d. more per 70lbs.; but Scotland and Ireland made no difference in prices, the growing wheat not being so far advanced.

The second Monday had rather better supplies, though they remained moderate. The rise in the country encouraged factors to demand higher rates, and in some instances an improvement of 1s. was occasionally made, but the transactions were too limited to make an alteration in the general quotations, and sales at a late hour proceeded at the former Monday's prices. In foreign a better business was doing, from a country inquiry, at something over the previous value. Through the week the country markets showed very little difference, the tendency being upward in very few places. Hull and Boston were only firm; Bristol and Gloucester were scarcely 1s. dearer; Birmingham advanced 1s. to 2s.; and Newbury fully 2s.; the improvement at Liverpool was more nominal than real, and related chiefly to the freedom of sales.

The third Monday, with genial weather and plenty of foreign (half of it being from St. Petersburg), ruled very dull; though the samples for the morning, from Kent and Essex, were only moderate in number. The St. Petersburg cargoes paying a profit, and some holders being indisposed to land their consignments on the face of harvest, there were some sales of this description at irregular prices; parcels for which 70s. had been declined on the previous Friday being quitted then at 66s., and at the close of the week 64s. was accepted. These low sales made other parcels of foreign difficult to quit, without a corresponding reduction. During the week nearly all the country markets showed a decline, and the business generally was on the most restricted scale. Hull and Birmingham prices were little altered, but Boston and Lynn were 2s. cheaper; Liverpool, excepting for the finest qualities, declined nearly as much. Bishop Stortford and Newcastle were 3s. to 4s., and Norwich 4s. to 5s. lower.

The last Monday had a very liberal foreign supply, much of it being of a good useful description. The samples from Kent were few, but from Essex there was a good show for the time of year. Business then was pretty well brought to a stand, yet there were some buyers of fine English at 2s. to 3s. less money, though any quality below this was entirely neglected. A change to bad weather may renew the former rates, but should the present favourable appearance last, a different range of prices is inevitable. The reported general sales for the last fortnight show a great falling-off in the quantity, say about 20,000 qrs. per week; but there has been a steady increase of foreign arrivals, as the following figures will show:—During the last four weeks there have arrived into the principal ports of the kingdom 328,997 qrs., giving a weekly average of 82,250 qrs.; whereas, in June, the average supply was only 56,651 qrs.; and the large shipments made in the Black Sea, America, and the Baltic, are likely to keep up the supplies for some time, all which will be serviceable for admixture with our own new crop, there being, it is thought, but little old of our own remaining for this purpose. The arrivals into the port of London during the last month have been, in English wheat 25,244 qrs., in foreign 66,831 qrs., which shows a weekly decrease on English, as compared with June, of 1,400 qrs., while the supply of foreign has doubled. The exports were 3,074 qrs., against 8,521 qrs. in the previous month.

The flour trade, generally in hand with that of wheat, has also shown but little variation in price till the close of the month, Norfolks evincing the greatest change. The receipts have fallen off in country sorts about 3,000 sacks weekly; and while foreign sacks have almost ceased, barrels have nearly tripled the quantity arrived in June, the total receipts for the last month being 46,343 sacks of country sorts, only 615 sacks of foreign, with 51,325 barrels American. The exports have been trifling, viz., 470 sacks. The first Monday commenced on limited supplies, with Norfolks firmly held at 54s., and town quotations 68s. The deficiency of Norfolks not being made up in the following week, they rose 2s. per sack; but American, being plentiful, did not participate in the advance. Another good foreign arrival on the third Monday brought a general slackness to the trade. On the fourth Monday, with rather more liberal supplies from the country, abundance from abroad, and the wheat trade prostrate, Norfolks declined 4s. per sack, and American 2s. per barrel, with a very limited business passing.

Barley, from its great scarcity, has steadily maintained the high prices with which it commenced. The total supply into the London market for the last four weeks has only been 1,366 qrs. English, and 17,536 qrs. foreign, which would scarcely be thought heavy for one week; and the foreign, being mostly bought on passage by distillers through the hands of agents, very little has appeared on the market. The arrivals as to a weekly average supply, foreign and English together, have been very little different from the previous month, being rather in favour of foreign, and showing a still greater decrease in English, plainly indicating, with such rates as now obtain, that our stock is cleared out. So even a course has the trade taken for the month, that there has been no variation in the prices, 46s. being about the rate of malting, and 42s. to 43s. for distillation. The fact that foreign countries cannot supply a malting quality in abundance shuts up this trade to the successful English grower, and the greatly reduced stock of malt, and late successful speculation on the duty, all point to high prices for whatever may be grown of fine quality, and the late general showers will have greatly contributed to produce it. The breadth, we learn too, is very short; but the once-unfavourable reports of the prospective produce have yielded to those of more promise.

The oat trade has been much better supplied than was at one time expected, the sudden start of 3s. per qr. in June having brought out foreign stores, which it was feared were not forthcoming. The reduction in the price of good sweet corn has not much exceeded 1s. per qr. during the month, but inferior and hot parcels have been out of the pale of regular quotations; some cargoes shipped in indifferent condition having become, by a lengthened voyage, perfectly red and ill-scented. The first Monday commenced with a good show of foreign, but after several weeks' short supplies this arrival was needed, and dealers being out of stock, they were glad to avail themselves of the opportunity to purchase; so that cargoes in good plight went off well, at fully the former rates. The second Monday showing but a moderate quantity on the weekly list, prices were then sustained; the third, with a greater plenty, did not give way for good sweet corn; but the fourth, with the harvest nearer, the weather finer, and arrivals more abundant, noted a fall in the best sorts of 1s. per qr. The Riga oats recently arrived have been of very light weight, say about 33lbs. per bushel, bringing 25s., their present value being about 24s. The Archangel shipments must now be shortly appearing, and will serve to meet the great consumption which must yet ensue before we get our own new crop in any quantity. The month's supply into London has been 5,097 qrs. English, 18,631 qrs. Irish, and 98,909 qrs. foreign; giving a total weekly average of 30,659 qrs., against 19,482 qrs. in June, being an increase of 11,171 qrs. weekly. The crop promises about an average.

The prices of beans and peas have not varied through the month. Supplies of the former have been moderate, and of the latter almost nothing in English sorts; but a large quantity has reached us from Canada of white peas, for which 46s. is asked, making the rates of this quality rather lower than before their arrival. The crop of pulse is said to be unusually promising, with great freedom from the attack of that incessant enemy, the fly: the late rains, too, will greatly help the podding. The supplies for the month have been, in beans, English 1,898 qrs., foreign 5,796 qrs.: both showing a great falling off. In peas only 108 qrs. English, with 4,868 qrs. white Canadian, which have gone to store. The falling off of Alexandrian beans must be traced to the obstruction to navigation, occasioned by the cleansing and deepening of the Mahmoudieh Canal. The Nile, as yet, is but low, and this prevents arrivals of the new crop, both of wheat and beans, at Alexandria.

Linseed, from the continued active demand from abroad, as well as the fact that arrivals have nearly been limited to those from India, has again advanced 3s. to 4s. per qr.; and cakes have been in great request, for feeding, at improved prices. Canary has taken a sudden turn upwards, to the extent of 10s. per qr.; a speculative inquiry having arisen, and the growth being reported as short. Rapeseed has increased in value 5s. per qr.; and the new that has appeared has been of inferior quality, selling at 4s. to 6s. per qr. less than the old. Nothing has been passing in cloverseed or trefoil, as articles for speculation, though some fine new white has appeared, by sample, from Hambro', with prices unfixed; which is likewise the case with some new trefoil of our own growth, also of good quality. In other seeds the prices have been firm, with little passing.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter

WHEAT, Essex and Kent, white	77 to	80	extra —		83
Ditto, red	68	73	„ —		77
Norfolk, Linc. and Yorksh., red ..	68	71	„ —		76
BARLEY, malting......	41	43	.... Chevalier..	43	46
Distilling....	40	42	.... Grinding .	36	39
MALT, Essex, Norfolk, and Suffolk....	69	72	extra		76
Kingston, Ware, and town made..	69	73	„		77
Brown....................	63	64	„		—
RYE..........................	—	—		—	40
OATS, English feed..	24	26	.... Potato..	25	28
Scotch feed....	26	28	.... Potato..	27	29
Irish feed, white	23	24	fine		26
Ditto, black..................	21	22	„		24
BEANS, Mazagan				38	40
Ticks				37	40
Harrow				39	42
Pigeon				42	46
PEAS, white boilers	44	49	.. Maple 44 46 Grey	40	42
FLOUR, per sk. of 280 lbs., Town, Households 63s., fine				67	68
Country 52s. 53s. .... Households....				54	57
Norfolk and Suffolk, ex-ship	—	—		51	52

FOREIGN GRAIN.

Shillings per Quarter

WHEAT, Dantzic, mixed..	84 to	86	high mixed —	84	extra	90
Konigsberg	82	84	„ —	85	„	86
Rostock, new	76	77	fine	82	„	88
American, white	68	70	red	64		68
Pomera., Meckbg., and Uckermk., red	78	80	extra	69		82
Silesian...................... „	72	74	white	76		78
Danish and Holstein .... „	64	68	„	66		70
Odessa, St. Petersburg and Riga..	60	62	fine	64		66
Rhine and Belgium.......... „	—	—	old	—		—
Russian......................			French..	none		
BARLEY, grinding	35	39	.... Distilling..	39		42
OATS, Dutch, brew, and Polands	26s. to	29s.	Feed ..	23		26
Danish & Swedish feed	23s. to	26s.	Stralsund	26		28
BEANS, Friesland and Holstein..................				39		40
Konigsberg ..	37	40	.... Egyptian ..	31		32
PEAS, feeding	38	40	fine boilers	44		48
INDIAN CORN, white	32	33	yellow	30		32
FLOUR, French, per sack......	—	—	Spanish	59		60
American, sour, per barrel....	34	36	sweet	38		40

IMPERIAL AVERAGES.

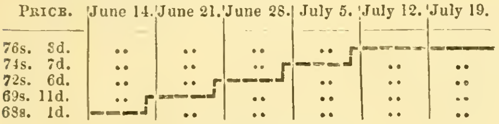
For the last Six Weeks.

Week Ending:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans s.	d.	Peas. s.	d.
June 14, 1856..	68	1	38	6	24	3	47	9	43	5	40	11
June 21, 1856..	69	11	38	4	24	7	44	4	42	9	41	0
June 28, 1856..	72	6	38	5	25	9	48	10	44	0	42	9
July 5, 1856..	74	7	39	7	26	1	48	11	44	5	43	0
July 12, 1856..	76	3	40	2	24	11	49	11	45	5	43	7
July 19, 1856..	76	3	40	4	26	11	52	0	46	0	43	9
Aggregate average of last six weeks	72	11	39	3	25	5	48	8	44	4	42	6
Comparative avge. same time last year	76	4	34	4	28	8	45	3	46	5	42	8
Duties	1	0	1	0	1	0	1	0	1	0	1	0

COMPARATIVE PRICES AND QUANTITIES OF CORN.

Averages from last Friday's *Gazette*.	Qrs.	Av. s.	d.	Averages from the corresponding *Gazette* in 1855.	Qrs.	Av. s.	d.
Wheat....	71,360 ..	76	3	Wheat....	95,103 ..	76	4
Barley....	1,688 ..	40	4	Barley....	6,143 ..	34	8
Oats	6,390 ..	26	11	Oats	9,477 ..	28	5
Rye......	29 ..	52	0	Rye......	91 ..	45	2
Beans....	1,851 ..	46	0	Beans....	2,738 ..	46	0
Peas	267 ..	43	9	Peas	275 ..	42	10

DIAGRAM SHOWING THE FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT DURING THE SIX WEEKS ENDING JULY 19, 1856.



PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red, (per cwt.)	—s. to —s.
Ditto white........................	—s. to —s.
Trefoil, (per cwt.)......................	—s. to —s.
Tares, winter (per bushel)............	7s. 6d. to 8s. 0d.
Coriander (per cwt.).....................	20s. to 24s.
Carraway (per cwt.).... new —s. to 50s., old	—s. to —s.
Canary (per qr.).........................	70s. to 74s.
Hempseed (none)	—s. to —s.
Linseed (p. qr.) sowing —s. to —s., crushing	58s. to 60s.
Linseed Cakes (per ton)..........	£10 10s. to £11 0s.
Rapeseed (per qr.)	new 88s. to 90s.
Ditto Cake (per ton)	£6 10s. to £7 0s.

FOREIGN SEEDS, &c.

Cloverseed, red, French	—s. to —s.
Ditto, white, Dutch	—s. to —s.
Tares, (per bushel)....................	5s. 0d. to 5s. 6d.
Hempseed, small, (per qr.)	—s. 56s., Ditto Dutch, 56s.
Coriander (per cwt.).....................	15s. to 20s.
Carraway	42s. to 46s.
Linseed (pr qr.) Baltic, 56s. to 58s.; Bombay,	56s. to 59s.
Linseed Cake (per ton)..........	£8 10s. to £9 10s.
Rapeseed, Dutch	88s. to 90s.
Rape Cake (per ton)..............	£5 0s. to £5 10s.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

Monday, July 28.

We are extensively supplied with new English Potatoes, in which a large business is doing at from 4s. to 5s. per cwt. Last week's imports were only 30 baskets from Guernsey, which realized 2s. 6d. per basket.

COUNTRY POTATO MARKETS.—York, July 19: We had a good supply of new potatoes, of excellent quality They sold at from 2½d. to 3½d. per quartern, and from 10d. to 1s. per peck. Leeds, July 22: We had a good show of new potatoes, which sold readily at from 11½d. to 12d. per 21 lbs. wholesale, and 5 lbs. for 3½d. retail. Malton, July 19: A moderate supply of new potatoes sold at from 4d. to 6d. per quartern. Thirsk, July 21: Potatoes, 10d. per stone. Richmond, July 19: Old potatoes, 3s. per bushel: new ditto, 1s. 4d. per peck. Manchester, July 24: New potatoes sell at from 6s. to 8s. 6d. per 252 lbs.

PRICES OF BUTTER, CHEESE, HAMS, &c.

Butter, per cwt.	s.	s.	*Cheese, per cwt.*	s.	s.
Friesland	94 *to*	104	*Cheshire*	70 *to*	84
Kiel............	—	—	*Chedder*	74	86
Dorset	100	106	*Double Glou., old*	72	80
Carlow	92	100	*New do.*	60	66
Waterford	90	98	*Hams, York*	84	94
Cork, new	98	102	*Westmoreland*...	84	90
Limerick	90	92	*Irish*............	80	92
Sligo	90	100	*Bacon, Wilts., dried*..	80	88
Fresh, per doz.	12s. 0d.	13s. 0d.	*Irish, green*....	72	78

ENGLISH BUTTER MARKET.

July 28.

The character of our trade is dull, and prices are barely supported.

Dorset, fine	108*s.* *to* 110*s.* *per cwt.*
Do. middling	98*s.* *to* 102*s.* „
Devon	100*s.* *to* 104*s.* „
Fresh	10*s.* *to* 13*s.* *per doz. lbs.*

BELFAST, (Friday last.)—Butter: Shipping price, 96s. to 101s. per cwt.; firkins and crocks, 10d. to 10½d. per lb.; Bacon, 64s. to 70s.; Hams, prime, 80s. to 88s., second quality 70s. to 76s. per cwt.; prime mess Pork, 96s. 6d. per brl.: Beef, 105s. to 140s. per tierce; Irish Lard, in bladders 74s. to 76s.; kegs or firkins, 68s. to 70s. per cwt.

July 25.	*Butter. per cwt.* *s.*	*d.*	*s.*	*d.*	*Bacon. per cwt.* *s.*	*d.*	*s.*	*d.*	*Dried Hams, per cwt.* *s.*	*d.*	*s.*	*d.*	*Mess Pork. per brl.* *s.*	*d.*	*s.*	*d.*
1852..	64	0	69	0	50	0	52	0	58	0	62	0	80	6	86	0
1853..	84	0	92	0	58	0	60	0	74	0	78	0	85	0	87	6
1854..	88	0	90	0	54	0	60	0	68	0	74	0	90	0	93	6
1855..	88	0	94	0	58	0	64	0	72	0	78	0	92	6	95	0
1856..	96	0	101	0	64	0	68	0	80	0	88	0	97	6	100	6

LONDONDERRY, (Thursday last.)—There was a good supply of Butter, which sold at last week's rates. Butter, firkins, per lb., first 11d., second 10½d., third 9¾d., fourth 9d., fifth 8¼d. to 8½d.; butts, fine 10¼d. to 11d., good 9½d. to 10d., middling 8½d. to 9½d.

GLASGOW, (Wednesday last.)—There were 8 carts, and there passed through the weigh-house 10 tons of cheese. Large supply and good demand. Old, 70s.; new, 53s. to 56s.; skim milk cheese, 28s. per cwt.

GLOUCESTER CHEESE FAIR was well supplied, about 120 tons of prime cheese being pitched. Trade was brisk, and the whole supply found buyers, at the following prices: Best doubles, 64s. to 68s.; singles, 56s. to 58s.; seconds, 52s. to 56s.; and skim, 32s. to 36s. per cwt.

CHICORY.

Per ton.

	£	s.	£	s.		£	s.	£	s.
Foreign Root (in bond) Harlingen	10	5	11	0	*Roasted & ground*				
English Root (free)					*English*	15	0	20	0
Guernsey	11	0	0	0	*Foreign*	30	0	36	0
York	10	0	11	0	*Guernsey*.....	26	0	29	0

FLAX, HEMP, COIR, &c.

We have had a very moderate business doing in Flax, this week, at about stationary prices. There is an active inquiry for Hemp, and new clean St. Petersburgh has realized £35 10s. to £36 per ton, other kinds being on the advance. Jute and Coir goods are dull.

COVENT GARDEN MARKET.

SATURDAY, JULY 26.

The supply of what is termed "soft fruit," as Gooseberries Currants, Strawberries, &c., has this week been abundant. West India Pine Apples have made their appearance in large quantities, 20,000 having been sold the other day by Messrs. Keeling and Hunt. They are in good quality, and fetch 1s. 3d. to 3s. 6d. each. Grapes are plentiful, and the same may be said of Cherries. Oranges fetch from 1s. to 1s. 6d. per dozen. Excellent Tomatoes are still arriving from France. Peas are well supplied, as are also all kinds of salading. Importations of fruit from the Continent, especially red Currants, have this week been considerable. Cut flowers consist of Heliotropes, Cacti, Orchids, Gardenias, Stephanotis, Pinks, Cloves, Carnations, Mignonette, Heaths, and Roses.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Pineapples, p. lb.	4	0	@7	0	*Cherries, per lb.*	0	6	3	0
Grapes, per lb.	2	0	5	0	*Straw'b'ries, p. oz.*	0	6	2	0
Figs, per doz.	2	0	6	0	*Goosebers. p. ½ sve.*	2	0	4	0
Melons, each	2	0	5	0	*Oranges, per 100.*	8	0	16	0
Peaches, per doz.	10	0	20	0	*Lemons, p. doz.*	1	0	2	0
Nectarines, p. do.	6	0	15	0					

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Cabbages, p. doz.	0	9	1	6	*Artichokes, each.*	0	4	0	6
Cauliflowers, p do.	1	0	3	0	*Veg. Mar., p. doz.*	0	9	1	0
F. beans, p. hf. sv.	2	6	3	6	*Tomatoes, p. doz.*	4	0	6	0
Peas, per quart	0	9	1	0	*Shallots, p. bunch*	0	6	0	9
Potato, new p. ton	50	0	90	0	*Garlic, per lb.*	0	6	0	8
Do., per bush.	2	0	2	9	*Lettuce, cab., p. sc.*	1	0	1	6
Car., new, p. bun.	0	5	8	0	*Radish, p. doz bun.*	1	0	2	0
Turnips, new do.	0	4	0	6	*Small Sal. p. pun.*	0	2	0	3
Spinach, p. sieve.	1	0	1	6	*Horserad., p. bnd.*	2	0	4	0
Cucumbers, each	0	4	1	0	*Mushr'ms, p. pot.*	1	0	1	6
Beet, per doz.	1	0	2	0	*Parsley, p. bunch*	0	3	0	4
Rhubarb, p. bund.	0	4	0	8	*Mint, green, ditto.*	0	2	0	3
Asparagus, p. 100	4	0	8	0	*Marjoram, ditto.*	0	6	0	8
Celery, per bund.	0	9	1	6	*Savory, do.*	0	2	0	3
Leeks, per bunch	0	3	0	4	*Basil, gn p. bunch*	0	6	0	9
Onions, gn. p. bun.	0	3	0	6					

TIMBER.

LONDON, SATURDAY, JULY 26.

	1855.				1856.			
	£	s.	£	s.	£	s.	£	s.
Quebec, red pine .... per load	0	0	0	0	3	10	4	0
yellow pine	3	0	3	10	3	0	3	10
St. John's, N.B., red	0	0	0	0	0	0	0	0
yel.	5	0	6	0	0	0	0	0
Quebec, Oak, white	6	0	6	10	5	0	6	0
Birch	5	10	6	0	3	10	5	0
Elm	4	10	5	0	4	10	5	0
Dantzic, Oak	6	10	7	10	3	5	4	0
Memel, Fir	3	5	4	10	3	10	4	10
Riga	3	10	3	18	0	0	0	0
Swedish	2	12	2	17	3	0	0	0
Masts, Quebec, red pine	6	0	9	0	9	0	12	10
yellow pine	5	0	8	0	8	10	10	10
Lathwood, Dantzic fm.	10	0	11	0	8	10	9	10
Memel	9	0	10	0	8	10	9	0
St. Petersburgh	12	0	13	0	0	0	0	0
Quebec	5	0	6	0	5	0	5	10
Deals, per C. 12 feet by 9 inches,								
Quebec, white spruce	17	0	20	0	15	0	18	10
red pine	16	0	20	0	17	0	20	0
St. John, white spruce	16	0	18	0	14	0	16	0
Yellow pine, per reduced C.								
Canada, 1st quality	17	10	20	0	16	0	19	0
2nd ditto	12	0	13	0	10	0	12	0
Archangel, yellow	0	0	0	0	21	0	22	10
Memel	12	0	18	0	15	0	19	0
Gefle, yellow, 14 ft.	21	0	25	0	25	0	27	0
Gothenburg, yellow	11	0	15	0	20	0	25	0
white	10	0	12	0	17	0	20	0
Christiania, p. C. 12 ft. by 3 in.								
yellow	26	0	30	0	24	0	28	0
white	22	0	26	0	20	0	24	0
Deck Plank, Dant., p. 40 ft. by 3 in	1	0	1	10	1	0	1	10
Staves, per standard M.								
Quebec, pipe	80	0	90	0	70	0	75	0
puncheon	20	0	25	0	18	0	20	0
Baltic, crown pipe	135	0	140	0	110	0	150	0

WOOL MARKETS.

BRITISH WOOL MARKET.

CITY, JULY 28.—The stocks of home-grown wool are but moderate for the time of year. For long-woolled qualities there is a better demand, at fully last week's prices; and other kinds may be considered steady. There is no disposition shown to give way on the part of holders, although 75,000 bales will be offered at the public sales of colonial now in progress.

	Per lb.					Per Pack of 240lb.				
	s.	d.		s.	d.	£	s.		£	s.
Down tegs	1	4	*to*	1	5½	16	0	*to*	17	10
Half-bred do	1	3	—	1	4½	15	0	—	16	10
Down ewes	1	3	—	1	4½	15	0	—	16	10
Kent fleeces	1	1	—	1	3	13	0	—	15	0
Combing skin	0	10	—	1	3½	10	0	—	15	10
Flannel wool	1	0	—	1	4	12	0	—	16	0
Blanket wool	0	8	—	0	11	8	0	—	11	0
Leicester fleeces	1	1	—	1	3	13	0	—	15	0

LIVERPOOL WOOL MARKET, JULY 26.

SCOTCH.—There is more disposition to purchase freely home descriptions, and although there is no change to notice in prices, they are in all cases well supported.

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs.	12	9	*to*	14	0
White Highland do.	14	6		16	0
Laid Crossed do.. unwashed	14	6		15	6
Do. do.. washed	15	6		16	6
Laid Cheviot do.. unwashed	16	0		17	6
Do. do.. washed	18	9		22	0
White Cheviot do.. do	30	0		32	0

LEEDS FOREIGN WOOL MARKET, July 25.—The transactions are not considerable, and prices are stationary. In low Wool the demand continues inactive.

MANURES.

PRICES CURRENT OF GUANO.

Peruvian Guano	*per ton*	£12	5	0 *to*	£13	0	0
,, *D. first class (damaged)*	,,	11	5	0	0	0	0
Bolivian Guano (none)	,,	0	0	0	0	0	0

ARTIFICIAL MANURES, OIL CAKES, &c.

Nitrate Soda	,,	19	10	0	21	0	0
Nitrate Potash or Saltpetre	,,	29	0	0	30	0	0
Sulphate Ammonia	,,	16	0	0	17	0	0
Muriate ditto	,,	22	0	0	23	0	0
Superphosphate of Lime	,,	6	0	0	0	0	0
Soda Ash or Alkali	,,	0	0	0	8	0	0
Gypsum	,,	2	0	0	2	10	0
Coprolite	,,	4	5	0	4	10	0
Sulphate of Copper, or Roman Vitriol for Wheat steeping	,,	42	0	0	43	0	0
Salt	,,	1	5	0	2	0	0
Bones, Dust	*per qr.*	1	5	0	1	6	0
,, *½ inch*	,,	1	4	0	1	5	0
Oil Vitriol, concentrated	*per lb*	0	0	1	0	0	0
,, *Brown*	,,	0	0	0¾	0	0	0
Rape Cakes	*per ton*	7	0	0	7	10	0
Linseed Cakes—							
Thin American in brls. or bags	,,	11	0	0	11	10	0
Thick ditto round	,,	9	10	0	10	0	0
Marseilles	,	9	10	0	10	0	0
English	,,	10	0	0	0	0	0

PICKFORD and KEEN, 35, Leadenhall-street.

Williams and Co., 24, Mark Lane, Azotic £6 10 0

Manufactured by Hodgson and Simpson, Wakefield, and Matthews and Co., Driffield,

Ammonia-Phosphate and Nitro-Phosphate, per ton £8 0 0
Superphosphate of Lime.................... ,, 7 0 0

Agricultural Chemical Works, Stowmarket, Suffolk.

Prentice's Cereal Manure for Corn Crops, per ton £8 10 0
Prentice's Turnip Manure .... ,, £7 0 0
Prentice's Superphosphate of Lime .... ,, £6 10 0

Lancashire Manure Company.

Widnes, near Warrington, J. Knight and Co.'s Nitrogenized Bone Manures .... *per ton* £8 15 0

Manure Works, Grovehill, Beverley.

Tigar and Co.'s Celebrated Turnip Manures, per ton £7 10 0

HIDE AND SKIN MARKETS.

SATURDAY, JULY 26.

	s.	d.	s.	d.	
Market Hides, 56 to 64 lbs	0	3¾	4	0	*per lb.*
Do. 64 72 *lbs*	0	4	0	4¼	,,
Do. 72 80 *lbs*	0	4¼	0	4¾	,,
Do. 80 88 *lbs*	0	4¾	0	5	,,
Do. 88 96 *lbs*	0	5	0	5¼	,,
Horse Hides each	6	0	0	0	,,
Calf Skins, light	2	0	3	6	,,
Do. full	7	6	0	0	,,
Lambs	2	8	4	0	,,
Shearlings	1	9	2	6	,,

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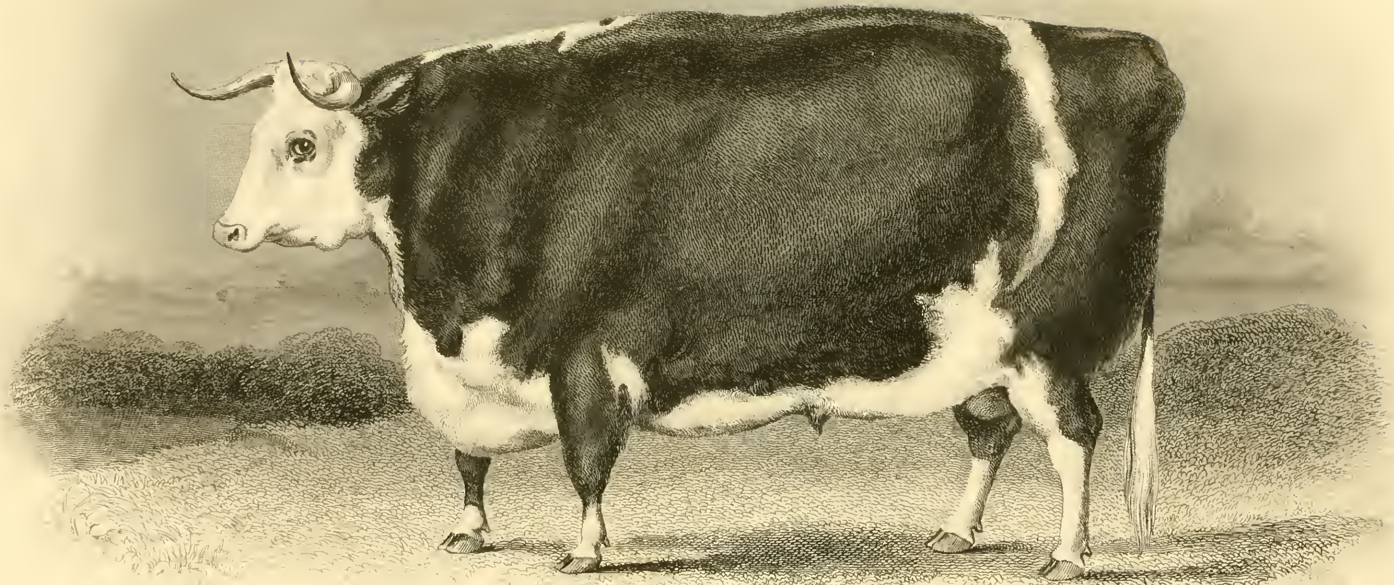

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THE FARMER'S MAGAZINE.

SEPTEMBER, 1856.

PLATE I.

A HEREFORD OX,

THE PROPERTY OF MR. WILLIAM HEATH, OF LUDHAM LODGE, NORFOLK,

For which the first prize of Ten Sovereigns, with the extra prize of Twenty Sovereigns and the Gold and Silver Medals, were awarded at the Birmingham and Midland Counties Cattle Show, Dec., 1855.

PLATE II.

RONALD,

THE FAVOURITE CHARGER OF THE RIGHT HONOURABLE THE EARL OF CARDIGAN.

Ronald is the horse on which Lord Cardigan led the memorable charge at Balaklava. We believe he is quite thorough-bred; and is certainly of rare stamp and substance. His lordship, however, both as a soldier and a sportsman has long been proverbial for his good judgment in horse-flesh. He has gone quite as brilliantly over Northamptonshire as even in the Crimea—as usual in the front.

Ronald—a chesnut, and bred by the late Duke of Hamilton—according to an agricultural friend who brings down some sixteen stone, is just the horse he has been long looking for—with two good ends, and something between them. As a national matter we commend the sort to the best attention of our agricultural societies: it is an important duty to encourage the breeding of such, considering how continually they are in request, and how ready the whole world is to look to England for both the model and the supply.

THE GROWTH OF THE WHEAT PLANT.

BY CUTHBERT W. JOHNSON, F.R.S.

On some former occasions, we have examined together many of the phenomena which attend the growth of the wheat plant. In the last number of the *Journal of the Royal Agricultural Society of England*, Professor Buckman has pursued the same interesting research; and at no period of the year can we, perhaps, again examine the subject more usefully than on the very verge, as it were, of wheat seed-time.

The choice of the seed is a primary question: it is here that in our cultivation we deviate, as we too often do, from nature. The seeds of the wild wheat, except in a few instances, are sown where they are ripened; unless carried by the winds or by animals, they are reproduced for a series of years on the same soil; in consequence, the plant yields small seeds—perhaps degenerate. The farmer avoids these ill results by changing the soil; by carefully manuring his land; and by varying his seed. He notes, too, that in this alteration of seed, certain facts, with regard to the new wheat, are beneficially to be regarded. In his prize essay, the Professor has alluded to some of these, and especially to the practice of the Gloucestershire farmers: he observes (p. 183), "That seed wheat should always be chosen from a poor soil for the seeding of a richer one, and from a cold climate for cultivation in a warmer; by acting contrary to this rule, we induce disease and a shortness in the yield. In Gloucestershire the hill farmer chooses seed from the exposed chalk Wolds of Wiltshire, while the vale farmer procures his seed wheat from the hills. But in the same manner as spring wheat may be cultivated into a winter variety, so may any kind of wheat become acclimatised by careful cultivation; this, however, sometimes entails a slight change of form; and hence have arisen tall and dwarf varieties, early and late forms, and numerous others. "New varieties of wheat," adds Mr. Buckman, "are constantly becoming the fashion with the agriculturist; but it must not be concluded that this is the result of caprice, as it is the nature of derivative plants to lose some of their qualities after a long career of changes, and hence varieties are always useful as a change, and the more distinctive these are, if adapted for our soil and climate, the better."

The *variety* of the seed wheat, however, is not the only very material consideration; the prevention of disease in it has long engaged the farmer's attention. He strives, and commonly successfully, to prevent blight, by immersing the seed wheat in brine, or solutions of sulphate of copper, &c.; the beneficial effect of which he is used to attribute, perhaps with correctness, to the fact that these substances kill the minute sporules or seeds of the fungi which have attached themselves to the seed wheat, and are the origin of the parasitical fungi which constitute blight. "But my own experiments upon this subject, together with careful investigation," remarks Professor Buckman, "seem to warrant the conclusion that the beneficial action of these steeps depends upon their destroying the germinating power of malformed and diseased seeds;" and he recounts some experiments which, he thinks, show that the pickling of wheat destroys the seed so as to prevent germination when the seed is diseased or ill-formed; but that if perfect seed were always employed, no pickling is at all necessary, it being perfectly true that a diseased progeny must result from an imperfect stock in plants as well as in animals.

The depth at which the seed is most beneficially placed, is a question not in general very carefully regarded. If we follow Nature here, we shall find her seeds mostly dispersed or germinating at, or close to, the surface; and it has been shown, in the case of some kind of seeds, that if shaded from the direct rays of the sun, they germinate, when thus placed, better than in any other situation. As, however, with our field operations, it is not possible to leave seeds thus exposed to their various enemies, and as it is necessary to cover them with earth, the next enquiry that promises to be interesting is (still confining our attention to the wheat plant) what depth from the surface happens to be practically the best? Now the experiments of Buckman and of Petri seem to concur in placing the depth at from one to two inches, as that possessing the maximum advantage. The result of the experiments of Petri will be seen in the following table, which gives the result of sowing given quantities of wheat at different depths:—

Seed sown to the depth of	Came above ground in	Proportion of plants that came up.
½ inch.	11 days.	⅞
1 ,,	12 ,,	all
2 ,,	18 ,,	⅞
3 ,,	20 ,,	¾
4 ,,	21 ,,	½
5 ,,	22 ,,	⅜
6 ,,	23 ,,	⅛

Here we may observe that the number of seeds which produced plants decreased in number, as the depth beyond one inch increased; and we well remember some experiments by which it was shown that some barley followed a similar progressive rule, until when sown at a depth of twelve inches, it entirely ceased to produce plants.

And if the depth materially influences the growth of the seed, so also, as the farmer is well aware, does the period of the year in which they are sown. But although we possess this general knowledge, yet, until the experiments which I am about to describe, we had none which gave the result of sowing the same wheat on the same soil in each month of the year. In the trials by Professor Buckman, he sowed in 1851 and 1852 red Lammas wheat in plots, on the 14th of each month, from June 1851 to May 1852: the results he has thus tabulated:—

	Height.		Length of head.	Remarks.
1851.	ft.	in.		
June....	3	5	3	Clean straw.
July....	2	10	2	Ditto.
Aug....	4	1	4	Ditto.
Sept....	3	11	4	Ditto.
Oct.....	3	10	4	Rather blighted.
Nov....	3	9	4	Ditto.
Dec.....	3	10	3½	Much blighted.
1852.				
Jan.....	3	10	3½	Ditto.
Feb.....	3	6	4½	Ditto.
March...	—			Failed as a crop, but some ears ripened.
April....	—			
May....	—			

The summing up of Mr. Buckman I have abbreviated in the following paragraphs :—

The winter was mild and wet—all the samples were gathered in August. One chief difference between winter and spring wheat is, that winter wheat sends out new roots and fresh fibrils in the spring, and at the same time tillers, and forms tufts, each shoot of which also roots like the central blade, and all this second growth occurs just when spring wheat is coming up. In spring wheat there is little disposition to tiller: as the growth is quick, the root has no period of rest, and therefore its fibres and fibrils are developed regularly, and have no fresh impulse of growth like wheat that has stood the cold of winter, and is prepared to meet the milder season of spring with an invigorated constitution, and an appetite that requires new roots and fresh rootlets to supply. It is on this account that winter wheat can be transplanted in spring with but little check to its growth, and even the tufts can be divided into slips, which is indeed a useful mode of augmenting our crop in experiments upon new and rare varieties. The seed having been sown as evenly as possible at the required depth, the following changes take place :—The grain begins to obtain moisture from the soil, and consequently enlarges in size. In a few days the embryo shows a great change; it has become enlarged—the lower part soon protruding as a rootlet—the upper as a bud, which will quickly develop leaves. Coincident with this proceed the chemical changes in the cotyledon, from which the germ is supplied with its food, until the roots on the one hand, and the leaves on the other, become capable of acting—the one as purveyors, and the other as eliminators of that food with which the plant may be surrounded, in the soil and in the atmosphere, and upon which depends its after welfare. If wholesome food for the plant be in the soil, it progresses favourably: if the reverse, disease or death will be the result. If the supply of these be insufficient, the produce is small; if too great, we get blighted leaves and straw, with too small a proportion of corn. If bad seed be sown, we have a diseased and malformed plant, resulting in their diseased and consequently blighted grain. All this, however, depends upon the air the plants get to breathe: if full of noxious vapour, they die; a small quantity of such gases as sulphuretted hydrogen, sulphurous-acid gas, and muriatic-acid gas, acting as a poison, and thus preventing wheat from being grown in the vicinity of some chemical and manufacturing works.

The nature of the food which the wheat plant derives from the soil, is known to materially influence the composition of the plant and the seed. Thus Hembstaedt long since found, by some experiments with wheat dressed with different manures, that when wheat, which was grown on land without any manure, yielded 9.2 per cent. of gluten, that it yielded, when dressed with

Vegetable matter............	9.6 per cent.
Cow dung..................	12.0 ,,
Sheep dung................	32.9 ,,
Night soil..................	33.14 ,,

The constituents of these decomposing applications are assimilated by the plant either in the gaseous form, at the moment of their extrication, or when they are dissolved in the moisture of the soil. It would seem, then, that a more extended and varied examination of the moisture of the same soils in their simple state, and when dressed with various manures, might be productive of useful results; and this has been, although but partially, accomplished by Professor Way, when he was examining the drainage waters from the rich hop-grounds of Surrey and from other lands; and if we regard the composition of such drainage waters as affording a tolerably fair view of that of the moisture retained in the surface soil, and from which the wheat plant derives at least the mineral portion of its food, then it is interesting to compare the composition of the mineral substances or ash of the wheat plant with those contained in land drainage water.

Now in the following table will be found—I. The substances found in 100 parts of the seed; II. of the straw and chaff of some Hoptoun wheat *(Jour. Roy. Ag. Soc.*, vol. vii., p. 631); and III. and IV. the matters (given in grains) contained in an imperial gallon of two (previously filtered) drain waters, from two fields on the land of Mr. Paine, at Farnham, in Surrey *(ib.*, vol. xvii., p. 133) :—

	I.	II.	III.	IV.
Silica............	5.63	69.36	0.95	0.45
Phosphoric acid ..	43.98	5.24	trace	0.12
Sulphuric acid....	0.21	4.45	1.65	5.15
Chlorine.........	—	—	0.70	1.10
Lime............	1.80	6.96	4.85	7.19
Magnesia........	11.69	1.45	0.68	2.32
Peroxide of Iron..	0.29	0.73	—	—
,, Alumina.	—	—	0.40	0.05
Potash..........	34.51	11.79	trace	trace
Soda............	1.87	—	1.0	2.17

Here, then, we find all the chief mineral constituents of the wheat plant, in the water of a cultivated soil; and in the same land-waters were found, in each imperial gallon *(in grains)* :—

	Soluble organic matter.	Nitric acid.	Ammonia.
I.	7.0	7.17	0.018
II.	7.40	14.74	0.018

It is one satisfactory result of the examination of these drainage waters, that the substances they carry away from the soil are not so very material in amount as at first sight we might be led to suppose; for as Mr. Way remarks, "It is to be remembered that, as the drains are at a depth of from four to five feet, all the soil to that depth is concerned in furnishing the substances which we find in the water. Assuming that a superficial inch of soil over an acre to weigh 100 tons, and that the drains lie at only 40 inches from the surface, we shall have 4,000 tons of soil subject to the solvent action of the water; and we shall find by calculation that the quantity of potash removed from the soil in the year by drainage, would be represented by the decimal ·00001 per cent., that is to say, that if the whole of the soil were analyzed before and after this quantity (7lbs. per acre) was removed, there would be found no greater difference in one hundred grains of soil than the one hundred-thousandth part of a grain.

These examinations will hardly fail to interest those of my readers who have considered the mode in which plants absorb their food from the soil or the atmosphere by which they are surrounded; and all such laborious steps, by which we increase our knowledge of the movements of organic bodies, assuredly tend to place our most practical efforts on a better, since upon a more intelligible, foundation.

OUR BEST BREEDS OF STOCK, AND THE PROPER CHANNEL FOR THEIR EXTENSION.

Agriculturists are thought to be proverbial for the tardiness they display as regards the adoption of new discoveries, or the application of new methods of cultivation; and by way of example we revert to a former article, wherein we remarked upon the slow progress that attended the introduction of improved Shorthorns into many of the districts of this kingdom, where at present they are only known by name. It is, notwithstanding, very true that crosses from that valuable breed now constitute the chief, in point of number, of all other breeds that weekly reach the metropolitan markets, whilst their excellence is established by their first attracting attention from butchers and salesmen immediately upon the opening of any market. Yet notwithstanding this acknowledged superiority, it is painful to witness the large number of very inferior animals that are monthly driven from town to town in search of customers; and still more so to find men heedlessly carrying on a pursuit wherein the breed of the animal not only constitutes its quality, but also its fattening properties—the two chief essentials of profitable grazing.

The force of habit with every class is too well known to be disputed. The same plan pursued by the father is too often carried out by the son with little variation, for long periods together; and we find upon one farm Galloway Scots, upon another North Wales runts, Herefords, or other varieties of breeds year after year, for generations. Now, it would require great powers of reasoning to convince either that the mode pursued was not under all circumstances the best. In this, then, we have an insuperable difficulty to overcome; and admitting it to be in part effected, how are the respective occupiers to be accommodated, so as to enable themselves to secure the opportunity of improving their breeds of cattle? pre-supposing that improved shorthorns have not yet been introduced into the district. It can hardly be expected that small farmers, keeping a few cows each, could purchase a bull of the description required; and as to combining for such a purpose, it might as well be expected of them to combine for subverting the constitution. Therefore it is that things continue as they have been, until chance directs some spirited individual to locate in the district, and to carry with him, in addition to other "new-fangled things," a bull of the "right sort of breed."

The annual exhibitions of the Royal Agricultural Society have the facility of conveying to the respective divisions of the kingdom it visits the knowledge of the various improved breeds of animals by the specimens exhibited, and so far to stimulate enterprise and a desire to obtain them. On the other hand, the residents of districts might be called upon to avail themselves of the opportunity of securing them, and not, as hitherto, allow them all to be sold either to foreign agents, or, to become returned to the respective localities from which they had proceeded, conferring no other benefit upon the district they have vacated than that of gratifying an unprofitable curiosity.

Whoever inspects the herds of Irish cattle that are now introduced into this kingdom, and sold for grazing purposes, must be struck with the great improvement in the breed that has taken place in this description of cattle within the last ten years. But whilst it is apparent that this must have been effected by judicious crossing, let them take a cursory inspection of their own immediate district, and endeavour by comparison to ascertain if a like improvement has followed. In a majority of cases we have no hesitation in stating that little if any advance will be found to have taken place. And it ought to be a matter of solemn reflection, not only individually but collectively, that, in an age when *progress* is the watchword, any class should be found standing still.

The committees appointed to take the preparatory steps for the introduction of the Society to any future locality would render essential service by impressing the necessity of availing themselves of the opportunities thus offered upon the agriculturists of the district selected, as collectively much might be done in purchasing some of the best animals. In fact, unless something of this nature is accomplished, we fear that one of the greatest objects sought to be attained will scarcely be secured—rather, as now, gratifying curiosity than conferring substantial benefit upon the districts visited.

THE REAPING MACHINE AS AN IMPLEMENT OF PRACTICAL UTILITY.

The judges' award over the adjourned trial of the reapers is of rather a Delphic character. The Romans may conquer you, or you may conquer the Romans. Crosskill may at first sound better than Dray, though for its especial object Dray may yet be "the best machine." For years now have we thus been ringing the changes. At first Crosskill's Bell is indisputably to be preferred; then Mr. Dray has his turn with his improvement on Hussey: and for a third season, after all the deliberate consideration of an adjourned trial, Burgess and Key's McCormick is unhesitatingly declared to be superior to all others. This is certainly rater perplexing, though at the same time the deduction to be made is sufficiently encouraging. If Bell's machine was good enough to take a prize on the first trial, of course Dray's must be an improvement to supersede it. McCormick by the same reasonable showing is still further in advance; and now Mr. Crosskill, after lying off for a time, comes out again and wins the fourth heat with an implement—excellent in its original design, at length perfected to something more excellent still

Curiously enough, however, any such conclusion is but a false one, after all. Either the exhibitors or the public would not appear to be in the way of profiting much by this adjourned trial at Boxted. The judges divide fifty pounds as near as they well can amongst three entries, toning down any effect that may follow placing a first, by adding that the one they mention only in a third degree is yet for reaping the best of all. The would-be customer scratches his head in no little doubt and perplexity—What is best, or which ought he to have? The answer again is but an echo of the oracle, "I say that Crosskill and Burgess and Key are to be preferred, but that Dray is the best reaping machine." But this is not all. Clever men like these makers have no doubt been continually watching each other; and thus, gaining a wrinkle here and smoothing down an objection there, have all gradually crept on to something like equal ability and perfection. Curiously enough, again, this is but another as erroneous a supposition:—"The judges regret to observe that very little improvement has been made in this class of machines since last year."

What *is* the farmer to do? His crops want harvesting, labour is scarce, and indirectly—for it comes very much to this—there is no machinery that he can trust to. Get over as he may this present time, for these adjourned trials come far too late to be of any immediate service, what is he to look forward to or order for another occasion? We really hardly know how to advise him. The Boxted Commission report with very faint praise; although, according to all reports, the implements would seem to have worked very well indeed. Let us grant, still, that the reaping machine is not as yet perfection; but a more pressing point by far for our consideration is—*is it fit for use?* Could the farmer with any confidence call in its aid in his present difficulty? Under ordinary circumstances and fair play, not exactly always opposed to wet weather and laid crops, would the experiment promise to answer?

Fortunately the Royal Agricultural Society itself can answer for us. Almost simultaneously with the appearance of this official award of the judges, comes the new number of the *Journal.* We have had little opportunity as yet to study its more elaborate essays. There is, however, one short paper that speaks so well and so directly to this matter, that we would at once call attention to it. Mr. Anthony Hamond, with some very valuable and recent experience during his three years' service as a steward of implements, is requested by the Chairman of the Journal Committee to give, more especially, his experience of the reaping machine. Mr. Hamond replies in this wise—"I have great pleasure in doing so. I think I may fairly say *it has now attained that degree of perfection which entitles it to be classed amongst implements of real practical utility.*"

The growers of grain will join in with a very energetic "*Hear, hear,*" over this. But this is not all. Mr. Hamond's is something more than an opinion. It is thus he proceeds to his practice:—"At the Lincoln Meeting I purchased an improved Hussey, by Dray, with tipping board. This I have used *for two harvests,* entirely to my satisfaction. It has not required twenty shillings in repairs, and is now ready to go to work at half an hour's notice. The first year I cut about a hundred and fifty acres of wheat, oats, and rye; the second, a hundred and fifty acres of wheat, besides oats and rye."

Mr. Hamond next explains how he works the machine, and at what cost: interesting particulars, to which our readers can easily refer, but for which we have not space. He concludes his letter, dated from Westacre, in May last, by saying that he "hopes to go to work next harvest with two Hussey's stern-deliveries, and one Burgess and Key's side-delivery. The mowing of barley by the latter at Mr. Miles' last year was very near perfection."

Another correspondent of the *Journal* introduces Mr. Parrington, of Lazenby, who expresses his "entire safaction" with the performance of Burgess and Key's M'Cormick:—"I have cut with it autumn and spring-sown wheat, varying in yield from thirty-two to forty bushels per acre, some of it much lodged; also a very heavy crop of oats, so much laid and twisted in parts, that I thought it impossible for any machine to cut them at all. One pair of horses worked the machine easily day after day; they have to travel no faster than the ordinary ploughing pace; and a boy of fifteen managed them without any difficulty."

It will be observed that while Mr. Hamond speaks up for Dray, Mr. Parrington is equally strong for Burgess and Key. The correspondence does not extend beyond the remarks of these two gentlemen; although, if necessary, many as warm an advocate might be found for Mr. Croskill's persevering improvements on the Scotch invention. In the position he now occupies he can well afford to hear this testimony to his contemporaries—in its effect as grateful to him as to them. "The reaping machine has now attained that degree of perfection which entitles it to be classed amongst implements of real practical utility."

The award of the judges at Boxted would scarcely lead us to believe as much. For our own part we cannot help fancying that this decree is altogether a little too hard in its tone. Its tendency, too, is impolitic. If there is any implement just now which should be encouraged into general use, it is the reaper. We think, moreover, the merits of these several inventions are sufficient to warrant a recommendation. It is with this view that we compare the award in Essex with the paper in the *Journal*. Even if there be no great improvement since last year, the reaper is proved to have advanced so far as to rank amongst the agricultural implements "of real practical utility."

A word even now may perhaps be not everywhere too late.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

ADJOURNED TRIAL OF REAPING MACHINES, AT BOXTED LODGE, Aug. 13 & 14, 1856.

[OFFICIAL REPORT.]

The Judges award to Mr. ALFRED CROSSKILL the sum of £20, for his "Improved Bell's Reaping Machine."

To Messrs. BURGESS and KEY the sum of £15, for their "Improved McCormick's Reaping Machine."

To Mr. WILLIAM DRAY the sum of £15, for his "Improved Hussey's Reaper."

From the result of these trials, the Judges regret to observe that very little improvement has been made in this class of machines since last year.

They consider that for general harvest purposes, the machines of Mr. Crosskill and Messrs. Burgess and Key are to be preferred; but for reaping only, they think Mr. Dray's decidedly the best machine.

H. B. CALDWELL.
THOS. HUSKINSON.
WM. CHALCRAFT.
CLARE SEWELL READ.

Boxted Lodge, August 14th, 1856.

ADJOURNED TRIAL OF THE REAPING MACHINES AT BOXTED LODGE.

THE STEAM PLOUGH.

The cheering and glorious light of Plenty is now smiling upon the harvest-fields of England, gilded with the rustling waves of heavily-filled ears, which in their soft undulations beneath the gentle pressure of ripening breezes, seem to solicit the reaper's sickle. Alas! in many places they solicit in vain: the hands that wield the reaping-hook have become scarce: the tide of labour which in former days came pouring in plentiful streams over the harvest-plains of England, has of late years flown into other channels, to reap a different harvest—the golden fields of Australia, the fertile settlements of America, have absorbed and continue to absorb countless numbers of our fellow-countrymen; and nearer home, the ever increasing production of our industry, constantly draws to the manufacturing districts thousands of labourers, whom the prospects of a lighter labour and more remunerative wages estrange more and more from the farmstead. Yes, it is an undeniable fact, that agricultural labour has become scarce. It is an evil upon which political economists have lately been wont to expatiate, according to the bias of their politics or economical theories. Party papers use it as a political capital, wherewith to uphold their own principles, and actually fling it as a reproach in the face of their opponents, to whose bad policy they blush not to ascribe its existence. Votaries of the old policy—and, *mirabile dictu!* there are still such living fossils to be found in England—lay it to their triumphant antagonist, commercial freedom, who, it is true, can well afford to treat the harmless shaft with contempt. Nevertheless it is an evil, to which a remedy must be speedily applied.

In a country like England, with its uncertain climate, where what is called a catching harvest is by no means the exception, the lack of labourers at this critical period is of the most serious import. There must needs be a ready and efficient substitute to enable the farmer to make the most of a sunny day, and, by the rapidity of the means employed, secure the treasures of his fields, the reward of his industry, from the dire chances of an unpropitious climate.

Although we are not prepared to say that the remedy has been found in its entirety, yet we rejoice in being able to state that it is in a fair way of being brought to perfection. The trials of reaping-machines, which took place last week at Boxted Lodge—the residence of that zealous agriculturist, William Fisher Hobbs—although they failed to satisfy the judges that those implements, in their present state, were adapted to all circumstances of surface of the ground and conditions of the crops, yet in those circumstances which were suited to their present capabilities, it is a cheering fact that they performed their task remarkably well. We shall presently furnish our readers with a few details of the interesting operations that have taken place at Boxted Lodge; but we feel bound, in the first place, to say a few words about that admirably managed farm, where the large and respectable company of agriculturists met on Thursday last, found so little to cavil at and so much to praise, and whose distinguished proprietor has been dispensing, with his usual liberality, such kind and magnificent hospitality.

In a recent number of the *Times*, a Scotch agricultural writer—Mr. Lockhart Morton—has given a sensible description of Mr. Fisher Hobbs's system of farming, and of the improvements he has achieved in his estate since the *Times*' Commissioner visited it. The meed of praise bestowed on Mr. Fisher Hobbs's management and system of farming appeared great even to the writer's mind; and lest his readers might think it overstretched, he alludes to the gathering of last week, and invites those who might doubt the justice of his encomiums to go and see for themselves. We, for our part, unhesitatingly corroborate Mr. Lockhart Morton's remarks on Mr. Hobbs; and we will add that to those who are intimately acquainted with that distinguished agriculturist—who are acquainted with his movements and pursuits—it is a matter of no little wonder that amidst the public and disinterested occupations he has willingly taken upon himself to fulfil, his constant attendance at the Council of the Royal Agricultural Society necessitating frequent absences from home, he should have succeeded in placing his farm in such a prosperous condition. Mr. Lockhart Morton cited a touching trait of liberality on the part of Mr. Dickson towards a worthy labourer, on whom the benefit was not bestowed in vain. We are in a position to allude to one still more benevolent on the part of Mr. Fisher Hobbs, because it was applied not to an individual only, but to a whole population.

On the day of the private trial of the reaping-machines, these implements had been brought on a piece of land where their capabilities were sorely tested; it was cultivated in furrows, the land appeared rough, and now and then the reapers would come to a stand-still, impeded in their movement by the uneven surface of the field. There also we all remarked that the crop, although good, was nevertheless somewhat inferior to that of the other parts of the farm. Mr. Fisher Hobbs explained that this part of his estate had only lately been reclaimed: it was a few years ago a wood, and had not yet been drained—a circumstance which accounted for the furrows. A gentleman of the neighbourhood, a large landed-proprietor and a county magistrate, who stood by us at the time, told us that the public ought to know under what circumstances Mr. Fisher Hobbs had uprooted his trees, and turned his woods into corn-fields. It appears that when the corn-laws were repealed, and the daring policy of the late Sir Robert Peel was at last inaugurated as the policy of Great Britain, the farmers of Essex were betrayed into a perfect panic. Many actually discharged the men in their employ, and prepared themselves for that supreme act of a man whose last hope has fled—*i. e.* what is vulgarly called to *shut-up shop*. In the immediate neighbourhood of Boxted Lodge nearly one hundred unfortunate labourers on whom the frantic disappointment of their employers had been wreaked, were about to be sent to the union, when Fisher Hobbs, be it recorded to his honour, nobly stepped forward, and pointing out to his woods, his undrained fields, his small inclosures, his weedy land—he had not been long in possession of his estate—bid the unfortunate labourers to resume their tools, and kept them in his employ until his neighbours who had turned them out had opened their eyes, and commenced to reap the benefits of that increased demand for agricultural produce which the new policy of the man they abused and accused of being the cause of their ruin had created all over the country. We shall not comment on such a trait as this, but leave its appreciation to the sense of our readers.

Wednesday, the 13th instant, was the day selected by the Royal Agricultural Society for the private trial of the reaping machines. It had been previously determined to exclude the public from the judges' operations on that day, to insure a greater liberty to their investigations as to the relative merits of the implements submitted to their judgment. Four machines were tried: Crosskill's Bell reaper, McCormick's by Burgess and Key, Dray's Hussey, and Palmer's Union. They were first put into a field in front of Mr. Fisher Hobbs's residence, containing about fifty-four acres of a heavy crop of wheat, some of which was much laid. Crosskill's machine, being propelled before the horses—a rather novel-looking arrangement—was first started, in order to make a roadway for the others. Now this is not a slight merit of that ingenious implement—that it can cut in any direction, a very simple contrivance enabling it to deliver the corn on either side of the platform. In those parts where the wheat was much laid, Crosskill's decidedly showed its superiority, always removing the whole clean off the ground without even touching the overlaid corn, or nipping off any of the overhanging ears, and strewing them upon the stubble. They were next put upon an undrained furrowed piece of land, that to which we have just alluded; and there the work was not so good. Crosskill's machine was now and then sticking fast into the uneven ground, especially when the off wheels descended into the furrow; the machine not having been previously adapted to that peculiarity of the soil. The other reapers, by taking a lesser breadth, were certainly enabled to do their work rather better; but, on the whole, not so thoroughly satisfactory as we could have wished to witness. They were then removed to a most magnificent piece of oats, in which they did their work in the most admirable manner possible; and had it not been for the advantage possessed by Crosskill's machine to cut a road right into the midst of the field, it would have been a very difficult task indeed on the part of the judges to decide which bore the palm of superiority. Thus ended the programme of that day's performance.

On Thursday morning, a gloomy sky and a shower of rain seemed to threaten to mar the proceedings of the day. Notwithstanding this, a great number of the leading agriculturists of the neighbourhood, as well as a good many tenant farmers, labourers, &c., began to assemble at Boxted Lodge, where very complete preparations had been made to give them a most hospitable reception. On the lawn before the house a spacious tent had been erected; and when, now and then, an indiscreet gust of wind lifted up the jealously closed canvas, the delighted eye of longing bystanders would catch a glimpse of two rows of tables, well laden with shining decanters and a goodly array of sundry viands and dishes most provokingly inviting.

In spite of the weather the reaping machines were tried in a field of barley, much laid, and already wet from the rain that was then pouring; but as it might have well been surmised beforehand, the four implements stuck fast, and had to be withdrawn. They were then brought back to the large field in front of the mansion, where, to the delight of a numerous assembly which the return of fine weather and bright sunshine had greatly increased, they did their work in right good earnest, the large extent of wheat disappearing as by magic, hemmed in as it was by three of the machines—Crosskill's having been removed to the upper part of the field, where a greater length enabled it to show its particular excellence to a greater advantage. It was then that the dynamometer was applied to the machines in order to ascertain the stress necessary for their motion. Here follows the result of that interesting operation:—

Crosskill's	Breadth cut, 5 feet 4 inches.
,,	Draught, 4 cwts.
Burgess & Key	Breadth cut, 5 feet 4 inches.
,,	Draught, 2 cwts. 3 quarters.
Dray's Hussey	Breadth cut, 4 feet 3 inches.
,,	Draught, 3 cwts.
Palmer's Union	Breadth cut, 4 feet 3 inches.
,,	Draught, 3 cwts. 7 lbs.

This terminated the trials, and the judges withdrew to consider their award, which was subsequently read at the dinner, to which, at the time appointed, a large number sat down, doing ample justice to the magnificent spread so liberally supplied by Mr. Fisher Hobbs.

When the noise of knives and forks, which as is usual on these occasions were vigorously plied, had at last been hushed, the Steward of Implements, Sir Archibald Macdonald, handed to the President, Mr. Fisher Hobbs, the following award:—

"ROYAL AGRICULTURAL SOCIETY.

"Adjourned Trial of Reaping Machines at Boxted Lodge, August 13th and 14th, 1856.

"The Judges award to Mr. Alfred Crosskill, for his Improved Bell's Reaping Machine, the sum of £20.

"To Mr. William Dray, for his Hussey's Improved Reaper, the sum of £15.

"To Messrs. Burgess and Key, for their Improved McCormick's Reaper, the prize of £15.

"From the result of these trials, the judges regret to observe that very little improvement has been made in this class of machines since last year. They consider that for general harvest purposes the machines of Mr. Crosskill and Messrs. Burgess and Key are to be preferred, but for reaping only they think Mr. Dray's decidedly the best machine."

(Signed by the Judges).

We now come to one of the most interesting features of the Boxted Lodge gathering, which was undoubtedly the trial of Fowler's steam plough. In the very field where the reaping machines had been at work, a space was cleared, and preparations were made to plough the land scarcely relieved of its burthen. It was even anticipated, we believe, in order to demonstrate the wonderful rapidity of mechanical operation, to reap, plough, harrow, and actually sow the same field in one day, besides thrashing, grinding, kneading, and baking a loaf of bread out of the crop that was standing in the field that very morning—a feat which was actually done. And there is no doubt but, had it not been for an untoward accident that happened to one of the valves of the steam-engines, and which took the whole day to repair, the former feat would have likewise been achieved. Another cause of delay was the unprecedented length of the field, which demanded an extra supply of wire rope; the judges being anxious, as well as the inventor himself, that the power necessary to draw the plough, together with a heavy length of wire rope, should be satisfactorily tested. Notwithstanding all these drawbacks and disappointments, by dint of exertions, the accident was repaired, a sufficient length of rope was paid off, and everything made ready for the morrow; and by 6 o'clock on Thursday morning the steam was up, and the plough cleaving and upturning its four furrows with wonderful regularity and efficiency. The soil consists of a hard shingly marl, almost baked by the drought, and, with a depth of seven inches and a great length of wire rope, required a great strain to propel the plough through; but, nevertheless, in it went, backwards and forwards, with marvellous ease and rapidity.

What strikes one, in this great invention, is the extraordinary simplicity of every appliance pertaining to it; the plough, the pulleys, the mode of moving the fulcra to and fro, the way in which the fixity of these is secured, the ingenious method of diminishing the friction of the rope by means of portable pulleys, themselves provided with wheels for their easy removal—everything, in fact, is so plain, so homely, that the dullest intellect grasps the whole at once, and fully understands the principle and its application.

The result of last Thursday's trial proved to the satisfaction of even the most sceptical pooh-poohing old farmers that it had come to pass at last, when steam cultivation was a great fact; and there is not a doubt that the meeting at Boxted Lodge will henceforth be celebrated as having consecrated as a reality the application of steam to the preparation of the soil. It was most enthusiastically proclaimed at the dinner by serious and practical men, who manfully owned their former incredulity, and now paid a willing homage to, and a ready acknowledgment of, the reality of Mr. Fowler's claims to the merit of having at last discovered that which but a few months ago appeared to all but enthusiastic or cracked-brain men a quixotic utopy, the attempt to realize which would undoubtedly send its votaries to the Insolvent's Court or a mad-house.

The more important speech on this occasion was undoubtedly that of Mr. Hudson, of Castle Acre, who is so deservedly looked upon as the Nestor of English Agriculture in skill and wisdom at least, if not in age. That gentleman, alluding to some remarks which had fallen from Mr. De la Trehonnais respecting the steam plough, avowed that from that day his prejudices against that great invention had entirely disappeared, and that he hoped to see one of those implements in the district in which he lived. He fully recognized it as an established fact, and his announcement of that opinion was received by deafening cheers, plainly showing that the numerous and influential audience that applauded him fully concurred in his sentiments.

The result of last Thursday's trial of Fowler's steam plough was as follows:—The plough went through the land at the rate of 1 acre 28 perches per hour, employing a force equal to twenty-two-horse power. To perform the same amount of work with horses it would require nine ploughs, and of course eighteen strong horses. This authentic result speaks for itself; let us hope that Mr. Fowler will at last receive at the hands of his fellow-countrymen in general, and especially at those of the Royal Agricultural Society, that encouragement which so much perseverance, ingenuity, and mechanical skill so richly deserve. We are not acquainted with the exact conditions laid down by the society for obtaining the prize of £500 offered for the best practical adaptation of steam to land-cultivation, but if they consist abstractedly in the discovery of a practical and economical mode of preparing the soil by means of steam, we fearlessly assert that in our opinion Mr. Fowler is fully entitled to that reward. T.

THE ROYAL AGRICULTURAL IMPROVEMENT SOCIETY OF IRELAND.

MEETING AT ATHLONE.

The Irish Society appears this year under far more encouraging auspices. Since the meeting at Carlow it has been thoroughly re-organised. Acting, mainly we believe, on the sound advice of their President, his Grace the Duke of Leinster, the Council manfully resolved to abrogate in a body, and give the members generally that opportunity of infusing fresh blood, which it had been argued was so much required. Of course a great majority of those previously in office have been re-elected, with the Duke himself at their head. Further, that inefficient organ of so important an institution—the Monthly Journal—has been stopped, at least until the funds of the society will allow it to appear in a more becoming form; while, with its fall comes, as we trust, an end to all that bickering and squabbling of which it was so long the mouth-piece. If a duty compelled us last year to refer to these matters, the event only shows how fully justified we were in all we said. The Royal Agricultural Society of Ireland was too important a one to have its usefulness frittered away in the indulgence of personalities. And those who read us aright must have known that we had only one aim—the well-doing of the society—when we denounced a line of conduct which could only conduce to discredit, if not, indeed, to utter annihilation.

We have now the word of two of the best and most influential in command, for saying the good ship is once more in smooth water, and that anything like a spirit of mutiny or dissatisfaction has been thoroughly suppressed. At the dinner in this Athlone week, the Duke of Leinster, in replying to the compliment paid him as President, thus proceeded:—"Since I last had the pleasure of meeting you, a very arduous task has fallen upon me, with respect to this society; but I am very happy to say that from the very able assistance I received I think all our difficulties are overcome, and that the society will now flourish and prosper. It gives me very great pleasure to state that, although the task was troublesome, I was able to bring matters to a happy conclusion." Again: Lord Clancarty considered "it was a most auspicious circumstance that after all the differences of the society had been arranged, the first, or what might be called the inaugural meeting of the society, should be held in the wild West, and honoured by the presence of the Lord Lieutenant."

This assurance is even more than merely encouraging. It would seem the rather to *establish* a new era for the Society, the success of which must chiefly depend on the unanimity of its supporters. As, however, we hinted last week, this "inaugural meeting" has had to contend against some disadvantages, more or less unavoidable. The weather throughout the week was bad, while Athlone itself was inhospitable. Instead of offering shelter to the stranger, a well-organised plan for "keeping up prices" was the only welcome. Of course this soon got known, mainly through the independent reports of the Dublin daily press; and, accordingly, enthusiasts who, braving every danger, came to see the show, strictly confined themselves to that object, and evinced no curiosity whatever to inspect the town. Fortunately there was food to be had at the station, and a bed at Ballinasloe, Mullingar, or even in Dublin. The very officers of the Society had to set up a kind of opposition to the good intentions of the people they had honoured with a visit. And yet, if we mistake not, these injudicious proceedings were very much within the province of "the Local Committee." It struck us last year, as it does still, that the carrying out of the Annual Meetings of the Irish Society is left too much to local authorities. In dealing with the arrangements of a national society, any such temporary an ally should only act *under* instructions from head-quarters. Loud and many were the complaints of exhibitors as to the manner in which they were treated by this temporary power, though little the redress.

There is no doubt but that a combination of these two causes—a want of fine weather and a want of accommodation—told a great deal against the complete success of the meeting. On the first public day, Wednesday, it rained, as perhaps it only can continue to rain in Ireland, to past noon; and when it did clear, it was but for the sun to shine on a show-ground almost impassable. On Thursday this order of things was reversed, and a very damp afternoon by no means added to the comforts of those whom the double inducement of a national gathering and a grand ball had seduced into a visit. With such a site—a hollow, that must have been selected only on the special understanding of "fair weather to the end"—this was bad enough, even for the spectator. It was naturally far worse for the chief actors on the scene, and many an owner of high-priced, high-conditioned stock must have felt nervous enough at their having to stand out two such days. It is, though, by this portion of the company, after all, that we have to test the real merit and strength of the meeting; and here the proof was at once self-evident.

As a show of cattle, that at Athlone was in many classes superior to the one at Carlow. The Shorthorns generally, taking them all through, bulls, cows, and young stock, were far more remarkable for average excellence. To the sheep—the Leicester, which is now apparently established as the national breed of the kingdom—the same meed of commendation is equally applicable. The horses, too, were decidedly on the improvement; and the Berkshire pigs once more promising to return to that extraordinary display of "forbidden fruit" which furnished so prominent a feature to the Armagh Meeting. *The* attraction, however, of every agricultural exhibition—the Hamlet of the whole play—is becoming indisputably more and more to centre in the Shorthorn. Whether you inspect the chief shows in England, Scotland, or Ireland—and it has now been our duty for some years to visit them all—you still find him on the increase and the improvement. It is, indeed, just at present a kind of race with the three kingdoms which shall do the best by him. If we have Mr. Towneley in England, there is Mr. Douglas in Scotland, and Mr. Campion in Ireland. We cite these as examples of what comparatively young beginners have been able to do, without going back to those under whose fostering care the breed first attained its superiority. The prize list will mark Mr. Campion still at his post and in his usual place. Neither Mr. Towneley nor Mr. Douglas—both well-known names with the Society—were on this occasion represented; though had they been we really believe they would have found the struggle closer than ever. In cows and heifers, more particularly, we really fancy something might have been brought out worthy to stand side by side even with Butterfly, or the ill-fated Rose of Summer.

To begin at the beginning, the first prize for aged bulls, and the medals for the best bull in the yard went to an English-bred animal, exhibited by an English gentleman, Mr. Ambler, of Watkinson Hall, Halifax. The name of this now famous beast is Grand Turk. He stood second at Chelmsford, and first in the Yorkshire Society's meeting at Rotherham, only the week preceding the Athlone meeting. Those who have not seen him can turn to very full descriptions of him, as already given in our reports of the shows referred to. Sufficient be it to say here that this bull unites size and quality in a very remarkable degree, and that the former recommendation does not appear to depend on any denounceable excess of over-feeding. Singularly enough he was only second at the Dublin Society's show in the Spring of this very year—the gold medal being taken by Lord Clancarty's Pro Bono Publico. At Athlone the latter ran a good second, when, as it was said, altogether out of form. The fact is, he suffered a good deal from his sojourn in Paris—where he was also a prize animal—and, according to the herdsman, is only just now getting round again, being still a little tender in the feet. This may in some degree account for the difference in the two decisions; the best of judges, we are afraid, being hardly proof against good condition. The history of Grand Turk traces back to Mr. Bolden's famous stock; while Matadore, the sire of Pro Bono Publico, has lately been imported into Ireland by Mr. Bancroft, of Kilbogget. He was purchased of Mr. Cruickshank, who bred Lord Clancarty's bull. It will be seen from this that the first and second prizes were imported. In the next class, and a very excellent one of two years old, both the prizes, as well as a high commendation, were home-reared stock. In the third, of yearlings, we come again to the Grand Turk—in the best test after all of a prize animal—his progeny. It is not every good-looking bull that gets good stock; but there is no mistake about that of Grand Turk's, and in the opinion of many General Jackson "will make as good a man as his father." In his chief points, quality, symmetry, and promise of size, the young one takes very much after his sire. The whole of this class was very good, generally the best of the bulls—every entry but Mr. Ambler's being bred and shown by the Irish themselves.

In the Cow Classes the home exhibitors were enabled to keep the prizes more in their own hands; the only stranger successful being Mr. Ambler, with a yearling heifer by Grand Turk. The "best cow," however, Mr. Campion's Jenny, or Romp, as she was first called, comes from Scotland; while the second in the same class was bred by Lord Berners. Still Ireland may be well proud of her own show of Shorthorn Cows. It is seldom, indeed, for instance, that one man could produce two such heifers as those of Mr. J. J. Turner. Public opinion was very much divided as to which was the better of the two; the majority inclining to place the white heifer as only second, instead of superior to her companion. They were had out again and again; and we must confess that, for our part, we should also be inclined to disagree with the decision. The white is surely a narrower animal than The Ace of Hearts, which, if we were to venture on a prophecy, we should say would in another year be the best Shorthorn in all Ireland. It is not often one sees such breadth of frame with so much grace and beauty—as is, in fact, noticeable in most of Mr. Turner's stock. The heads of some of his heifers were in themselves quite pictures; the full mild eye and calm expressive countenance, united with the well-rounded form—the very model, in fact, old Homer must have thought on, when he compliments his goddess as "the ox-eyed" Juno. Jenny, the picked cow on this occasion, is also a very perfect animal. This is the second time she has won the Purcell Challenge Cup; having also been pronounced the best at Carlow last year. As a lot, the cows and heifers at Athlone, we must repeat, were of far more than average merit, the Irish breeders themselves showing in great strength. The only thing in any way to cavil at was the condition in which some of them were exhibited. There was one of the prize cows especially, and those who saw them will not require to be told which, monstrously over-fed. The fat stood out upon her fine frame in unsightly patches; and, despite the coolness of the temperature, she was nearly as much distressed as any unhappy, though similarly complimented pig, brought to an equally fit state for breeding purposes. Surely this is but another illustration of "killing with kindness." This cow, however, is said to have had a calf this year, and she should produce many a one yet. We very much doubt it; and can hardly hope for her that career of genuine usefulness which has distinguished old Grandiflora with all her many honours and numerous family. The latter deservedly stands commended amongst the aged animals, as Mr. Barcroft's cow.

"The Other Breeds" in Ireland, like "the Extra Premiums for Tenant-Farmers," have generally been more or less of a failure. Amongst the former at Athlone were a few choice Kerries, the prize bull being in his way quite a miniature of a perfect animal. Lord Berwick did not send his Herefords entered, and so there was no competition. The Devons, of a rather coarse character, were chiefly in the hands of Lord Charlemont; and Lord Lurgan, Mr. Pollock, and Lord Talbot de Malahide furnished a few good useful-looking Polled Angus. As specimens, however, of other breeds, the call was unquestionably with the Kerries. Good milkers and doers as they are said to be, we wonder that with their neat, pretty, and petite appearance, they do not more frequently supplant the Alderney in the two or three-acre piece at the back of "Rose Cottage" or "Mount Pleasant Place."

The tenant-farmers "rented at not more than one hundred a year," sent one cow, one heifer, and two sows, to compete for six prizes. Surely this class had better be re-modelled, or for a time at least omitted. At present its only effect in the catalogue is an unfavourable one.

In Ireland the Leicester sheep still continues as great a favourite as the Shorthorn ox or the Berkshire pig. The chief strength of a very good sheep show was all with them, well backed as they were by the other long-wools, or in other words, by the Cotswolds. Mr. Torr, it will be seen, urges that the pure long-woolled sheep should continue to be kept intact in Ireland. Messrs. Campion, Owen, Roberts, and others, certainly prove they can be bred here with great success, preserving both their size and their quality. The Cotswolds are, still, creeping into favour; and the home breeders have to thank such men as Mr. Beale Browne for the opportunity afforded them of obtaining a good cross. His picked lot of ewes have again pursued precisely the same career another pen did last season—second at the Royal English Show, first at the Yorkshire, and first in Ireland. We believe they returned unsold; but three shearling rams in the same pen went—the one at thirty, and the other two at twenty-five guineas each. Mr. Browne is another sufferer by the Paris visit. His prize ram there died of mortification, from having his ears bored; and another prize sheep, we hear, is irretrievably injured from a similar cause. The authorities persisted in having this done, with the object that the same animal should not be again exhibited.

The Marquis of Conyngham was the only exhibitor of Cheviots, but they were all remarkably good, some superior to what we saw in Scotland. It is a significant mark of their excellence that although there was no competition, the judges awarded them every prize that was offered. A few Southdowns—for which Mr. Roberts took the premiums with two of Mr. Overman's rams—and one very good pen of Shropshire Downs, the property of Mr. Atkinson, complete the sheep show. It is only right to add, that never was this class of stock exhibited under more trying or unfavourable circumstances. A sheep wet through is not a happy-looking animal.

The entry of horses, as we have already intimated, was decidedly on the improvement. The young stock and draught mares were better than we have seen; and there were none of that peculiar race of draught stallion to be found ere now at meetings of this society. About the only thing that reminded one of the sort was a light, leggy Norman, who has to drop and furnish a good deal yet before he can promise to do much towards bettering the breed of Irish cart-horse. The great run just now is on the Clydesdales, of which there were some very good, both stallions and mares. The first prize, a nice-looking horse, is imported; but both Mr. Rait and Mr. Pollok, we believe, breed them at home. The latter gentleman, who comes himself from Scotland, has now some thousands of acres of land in cultivation near Ballinasloe. He is said to be doing it with great spirit, with no sparing of capital nor energy.

A good show of Berkshire pigs, a few poultry, some Irish butter and dressed flax—all appropriately introduced on such an occasion—lead one to the second division of a well-filled catalogue. This is the implement department, a feature which for the last year or two has promised, under the auspices of the Society, to do much for the agriculture of the Sister Kingdom. At the first glance the movement appeared still to be progressing favourably. We found many famous names here:—Garrett, Ransome, Howard, Richmond and Chandler, Smith and Ashby, Barrett and Exall, Gray (of Belfast), and others, whose presence the prize-list will speak to. It, however, by no means speaks to all these. Many of our leading firms no longer recognise such an authority. At Athlone the Ransomes, the Howards, and the Garretts distinctly declared that their implements were not to be tested. They were conspicuously ticketed as "not for competition." Our own opinion of what such a system will end in has been given, again, within this week or two. It is to the credit of Mr. Torr that he never rises in a meeting of his brother agriculturists but that he speaks at once to the point. As one of the Implement Judges at Athlone, he thus addressed himself to this matter, when called upon to return thanks at the dinner: "He desired also to communicate a fact of the highest importance, about which no secret was made—he had to tell them that the implement makers of England had combined and formed an organization to prevent competition in the implement classes. In his opinion they were acting most ungratefully to the Royal Agricultural Society by pursuing such a course of conduct *(loud cries of Hear, hear)*. Many of the large and eminent makers, in the pursuit of a very lucrative business, had risen to a position which they did not wish to lose, and feared that if they competed they might be beaten by some one of the little fellows. The originators of this combination attempted to explain away this resolution by the apparently magnanimous declaration that they did not want money-prizes at all; but the truth was, that they desired to avoid competition and exhibition altogether. He held that where there was no competition there could be no sure test for decision upon merit. What these exhibitors wished was to make bazaars of the show-yards; and if the principle sought to be then enforced was upheld, Ballinasloe Fair might be said to resemble the Royal Agricultural Society in all respects."

At the Yorkshire Meeting Mr. Legard declared himself much to the same effect: "It had been objected that great manufacturers were unwilling to come into competition with smaller ones. He hoped that was not so, because competition was the life-blood of societies of this kind; and when it ceased, the usefulness of such societies would be greatly diminished. They must not forget that competition was one of the primary rules of the society."

We do not know whether competition be one of the primary rules of the Irish Society; but the sooner it becomes a standing one in every association of the kind, the better will it be for all concerned. Our manufacturers should know by this, that no matter how often repeated, nothing sells an implement faster than a good trial. The best man may soon grow out of date, when he rests satisfied with only what he has done. The great firms at Athlone must have known they could have nothing to fear; whereas many of the public might fancy there was some such cause to influence them. The effect, we repeat, cannot be but prejudicial.

The consequence is that the Athlone prize return reads in this fashion:—The best corn drill—*No competition.* The best for small occupations—*No competition.* The best turnip drill—*No merit.* Best seed and manure drill—*Not sufficient merit.* Best machine for distributing portable manure—*None.* No corn drills, no turnip drills, no manure drills, with such firms as Garrett and Ransome in the yard, sounds oddly enough! If this can only be persevered with, the prize list of a national agricultural society will soon come to "no nothing."

It will be found from this one, that the Irish Society has, in a great measure, followed the example of the English, and arranged the list this year chiefly for implements employed in cultivation. As that was what the manufacturers themselves agreed to, they might with all consistency have as readily gone to trial in Ireland as they did in England. We really cannot see the distinguishing cause.

The dinner at which this "combination" was denounced was but poorly attended. There were many reasons for this—the weather and the grasping spirit of the townspeople amongst the first. Then, again, it was not known there would be any "through" train to Dublin afterwards; and above all, this banquet does not commence until at least two hours after it should do. It is not announced before seven, about half-past that is of English time; and the consequence is that too many are tired of waiting about, and quite worn out before the toast-list is concluded. The Royal Agricultural Society of England's dinner—always a bumper, is set for a "sharp" four o'clock; and we do not think that even the Lord-Lieutenant would, for once in the way, object to an earlier hour. A report of what occurred here will be found further on.

PRIZES FOR CATTLE, &c.

SHORTHORNS.

JUDGES:—John Grey, Dilston, Northumberland.
John Wright, Chesterfield.
Wm. Bartholomew, Goltho.

The best bull, calved on or after the 1st of January, 1851, and previously to the 1st of January, 1854, twenty sovs., and the Gold Medal as the best of all the prize Bulls, to H. Ambler, Watkinson Hall, Halifax.

The Medal, as the breeder of the best bull, to J. B. Bolden, Springfield Hall, Lancaster.

Second, five sovs., to Earl of Clancarty.

Very highly commended, Hon. L. H. King Harman's red bull.

The best bull, calved in the year 1854, ten sovs., to Ambrose Bole, Park-place, Bashenny.

Second, five sovs., to Finlay W. Cusack, Malahide, Dublin.

Highly commended, C. L. Ellson's bull.

The best bull, calved on or after the 1st of January, 1855, ten sovs., to H. Ambler, Watkinson Hall.

Second, five sovs., Hon. L. K. Harman.

Commended, Mr. P. J. Kearney's bull.

The best cow, in calf or in milk, of any age, ten sovs., to Rowland Campion, Oldtown, Shanballymore.

Second, five sovs., to Lord Viscount Monck, M.P.

Commended, Mr. Jaffray Barcroft's cow.

The best heifer, in calf or in milk, calved in 1853, ten sovs., and the Gold Medal as the best of all the prize Cows, to Rowland Campion.

The medal, as the breeder of the best cow, to J. Haigh, Cameron House, Fife.

Second, five sovs., to Hon. L. K. Harman.

Commended, Earl of Clancarty's heifer.

The best heifer, in calf or in milk, calved in 1854, ten sovs., to J. J. Turner, Newtown Villa, Kilcullen.

Second, five sovs., to J. J. Turner.

Commended, Viscount Moncke's heifer.

The best heifer, calved on or after the 1st of January, 1855, ten sovs., to Rowland Campion.

Second, five sovs., H. Ambler.

Highly commended, Earl of Clancarty's shorthorned roan heifer.

Commended, Earl of Clancarty's and J. J. Turner's heifers.

OTHER BREEDS.

Judges.—Henry Croker, Dromkeen, Co. Limerick.
Wm. Fetherstonhaugh, Carrick, Mullingar.
Wm. Fetherstonhaugh, Grouse Lodge, Moate.

The best Hereford bull, calved on or after the 1st January, 1851, five sovs., *no competition.*

The best Devon bull, calved on or after the 1st January, 1851, five sovs., to Earl of Charlemont.

The best polled Angus or Galloway bull, calved on or after the 1st January, 1851, five sovs., to Lord Lurgan's polled Angus.

The best Ayrshire bull, calved on or after 1st January, 1851, five sovs., to William Boyle, Albert Model Farm.

The best Kerry bull, calved on or after 1st January, 1851, three sovs., to Earl of Charlemont.

The best Devon cow, in-calf or in-milk, of any age, four sovs., to Earl of Charlemont.

The best Devon heifer, calved on or after the 1st January, 1855, three sovs., to Earl of Charlemont.

The best polled Angus or Galloway cow, in-calf or in-milk, of any age, four sovs., to Edward Atkinson, jun., Seafield, Donabate, pure, bred polled Angus.

Highly commended, Lord Talbot de Malahide's polled Angus.

The best polled Angus or Galloway heifer, in-calf or in-milk, calved on or after 1st January, 1853, three sovs., to Lord Talbot de Malahide's polled Angus.

Commended, another of Lord Talbot's heifers.

The best lot of two polled Angus or Galloway heifers, calved on or after the 1st January, 1855, three sovs., to Lord Talbot de Malahide.

The best Ayrshire cow, in-calf or in-milk, of any age, four sovs., to Earl of Clancarty.

The best Ayrshire heifer, in-calf or in-milk, calved on or after 1st January, 1853, three sovs., to William Boyle.

The best lot of two Ayrshire heifers, calved on or after 1st January, 1855, three sovs., Allan Pollok, Fairfield, Creggs.

The best West Highland cow, in-calf or in-milk, of any age, three sovs., to Allan Pollok, Lismany, Ballinasloe.

Commended, Charles Luke Ellison's cow.

The best West Highland heifer, in-calf or in-milk, calved on or after the 1st January, 1853, two sovs., to C. L. Ellison, Loughglyn, Frenchpark.

Commended, Allan Pollok's heifer, in-calf.

The best lot of two West Highland heifers, calved on or after 1st of January, 1855, two sovs., to Allan Pollok.

The best Kerry cow, in-calf or in-milk, of any age, three sovs., to Lord Talbot de Malahide.

The best Kerry heifer, in-calf or in-milk, calved on or after 1st January, 1853, two sovs., to Earl of Charlemont.

EXTRA PREMIUMS

Competed for by *bona fide* tenant farmers of Ireland, and paying more than £100 a year of rent.

Sec. 1 and 2, *no competition.*

The best breeding sow, over 18 months old, three sovs., to Mathias Harford, Moate, white Cumberland, with litter.

The best sow, under 18 months old, two sovs., to Mathias Harford.

HORSES FOR AGRICULTURAL PURPOSES.

Judges:—Lord Crofton, Mole Park, Athlone.
Hon. Walter Arbuthnot, Dublin.
G. A. Boyd, Middleton Park, Kilbeggan.

The best stallion, foaled on or after the 1st of January, 1849, and previous to the 1st of January, 1854, thirty sovs., and the Medal as the best Stallion, to Archibald Molloy, Carrickmines, Clydesdale—" Diamond."

The Medal, as the breeder of the best Stallion, to A. M'Kinley, Neithcross, Dumbartonshire.

Second, ten sovs., to Silvester Rait, Rathmoyle, Edenderry, Clydesdale—" Glancer."

The best stallion, foaled on or after the 1st of January, 1854, fifteen sovs., to Allan Pollok's cart stallion.

Second, ten sovs., to Miss Morris, Gartnamona, Clydesdale.

The best draught mare in foal, or with a foal at her foot, or having reared a foal in the year 1856, ten sovs., to Silvester Rait, Clydesdale.

Second, five sovs., to R. S. Fetherstonhaugh, Clydesdale.

Commended, Miss Morris's cart mare.

The best draught filly, foaled in the year 1853, five sovs., to Allan Pollok, Ballinasloe.

Second prize withheld.

The best draught filly, foaled on or after the 1st of January, 1854, five sovs., to Andrew Chalmers, Minor's Hill, Dalky.

Second, *no merit.*

The best draught filly, foaled on or after the 1st of January, 1855, five sovs., to A. Chalmers, Miners' Hill, Dublin. [Mr. Rait's filly, to whom the premium was first awarded, being disqualified, not having been duly entered.]

For the best foreign ass, ten sovs., *no exhibitor.*

SHEEP—LEICESTERS.

Judges:—William Torr, Aylesby Manor, Lincoln.
Benjn. Swaffield, Pilsbury, Ashbourne, Derbyshire.
C. G. Ballykisteen, Tipperary.

The best shearling ram, ten sovs., to Rowland Campion.

Second, five sovs., to R. W. Reynell, Killucan.

Highly commended, Rowland Campion's sheep.

Commended, John Roberts' and Thomas Roberts' sheep.

The best two-shear ram, ten sovs., to Rowland Campion.

Second, five sovs., to Rowland Campion.

Commended, Thomas Marris, Chase House, Lincolnshire.

The best ram of any other age, not exceeding six years old, five sovs., to Thomas Carter, Scales, Yorkshire.

Second, three sovs., to W. Owen, Blessinton, Wicklow.

Highly commended, R. W. Reynell.

Commended, Rowland Campion.

The Medal to Rowland Campion, for the best Ram in all the sheep classes, for his Leicester.

The best pen of five shearling ewes, ten sovs., to Lord Clonbrock.

Second, five sovs., to Rowland Campion.

Commended, W. Owen's ewes.

The best pen of five ewes, not exceeding five years old, ten sovs., to W. Owen.

Second, *no merit.*

The best pen of five ewe lambs, five sovs., to John La Touche, Harristown.

OTHER LONG-WOOLLED SHEEP

(Not qualified to compete as Leicesters).

The best shearling ram, ten sovs., to N. W. Roche, M.D., Fermoy, county Cork.

Second, five sovs., to T. Beale Browne, Hampen, Gloucestershire.

Also *commended,* another of T. Beale Browne's rams.

The best two-shear ram, eight sovs., to N. W. Roche, Esq.

Second prize—*none.*

The best ram of any other age, not exceeding six years old, five sovs., to N. W. Roche.

The best pen of five shearling ewes, five sovs., to T. B. Browne.

Second, three sovs., to Hon. L. H. K. Harman.

The best pen of five ewes, not exceeding five years old, five sovs., to Ambrose Bole, Park Place, Tashinny.

Second, three sovs., to David Kerr, Edenderry.

The best pen of five ewe lambs, four sovs., to Ambrose Bole.

Commended, the Hon. L. H. K. Harman's lambs.

CHEVIOTS, OR ANY OTHER MOUNTAIN BREED.

For the best ram of any age, not exceeding five years old, five sovs., to the Marquis of Conyngham.

Second, two sovs., to the Marquis of Conyngham.

The best pen of five shearling ewes, three sovs., to the Marquis of Conyngham.

Second, two sovs., to the Marquis of Conyngham.

The best pen of five ewes, not exceeding five years old, three sovs., to the Marquis of Conyngham.

Second, two sovs, to the Marquis of Conyngham.

SOUTHDOWNS.

The best shearling ram, four sovs., to Thomas Roberts, Park Farm, Strokestown.

Commended, two of Mr. Marris's rams.

The best ram of any other age, not exceeding five years old, four sovs., to Thomas Roberts.

The best pen of five shearling ewes, three sovs., to Thomas Marris.

The best pen of ewes, not exceeding five years old, three sovs., to Thomas Marris—Other Short-woolled Sheep.

The best shearling ram, four sovs.—*none*.

The best ram of any age, not exceeding five years, four sovs., to Gustavus W. Lambart, Beau Parc, Slane (Shropshire).

The best pen of five shearling ewes, three sovs., to P. J. Kearney, Clomnellon.

The best pen of ewes, not exceeding five years old, three sovs., to Edward Atkinson, jun., Malahide (Shropshire).

PIGS.

Judges.—Hon. W. Arbuthnot.
Wm. B. Harris, Thale, Reading.
Henry Croker, Dromkeen, Limerick.

The best boar under 18 months old, ten sovs., and the Medal as the best Boar, to Lord Castlemaine (Berkshire).

Second, five sovs., to Arthur D. Chaigneau, Benown, Athlone (Berkshire).

Commended, T. Rutherford (home-bred Berkshire).

The best boar over 18 months and under 36, eight sovs., to Arthur D. Chaigneau (Berkshire).

Second, four sovs., to John Hodson, Moyford, Athlone (Berkshire).

Commended, Gustavus H. Temple, Loughrea Lodge, Athlone Berkshire).

The best breeding sow under 18 months old, eight sovs., to the Rev. John Warburton, Kill, county Kildare (Berkshire).

Second, four sovs, to Sir Robert Paul, Bart., Ballyglan, Waterford (Berkshire).

The best breeding sow over 18 months old, five sovs., to Henry Carroll, Ballynure (Berkshire).

Second, three sovs., to Lord Castlemaine (Berkshire).

Commended, J. O. S. Pollock, Mountainstown (Yorkshire).

The best lot of breeding sow pigs of the same litter, not more than 10 months old, five sovs., to Gustavus H. Jones, Belleville, Athlone.

Second, three sovs., to Henry Carroll.

Commended, Francis W. Tomkinson, Harristown, Kinnegad.

DAIRY PRODUCE, FLAX, AND SEEDS.

Judges.—John Borthwick, Belfast.
J. B. Bankhead, Balbriggan.
Henry Croker, Dromkeen, Limerick.

DAIRY PRODUCE.

The best firkin of butter, 70lbs. weight, suited for the English or London market, and made on the farm of the exhibitor during the season of 1856, 5*l*., and the Medal as the best of all the prize butter, to Miss Nugent, Donore, Mullingar.

Second, 3*l*., to Francis Horde, Raughlan Lurgan.

Third, 2*l*., Thomas Gill, Athlone.

The dairymaid whose butter wins, and who shall have been at least six months in her employer's service—in addition to the Society's certificate—the three prizes, 1*l*., 15s., and 10s., were awarded respectively to the dairymaids by whom the foregoing lots were made.

The best coopered six butter firkins, suitable for the English and London market, 1*l*. 10s., to Mathias Hartford, Moate.

The best firkin of butter, 70lbs. weight, suited for the foreign market, and made on the farm of the exhibitor during the season of 1856, 5*l*., first prize—*not sufficient merit*.

Second, George Fleming, Lurock House, Moate.

Third, Allan Pollock.

The best coopered six butter firkins, suitable for the foreign market, 1*l*. 10s., to John Harford.

CHEESE.

In the four sections of this class the judges held that there was *no merit*.

FLAX.

The best bundle, not less than 16lbs. weight, of mill-scutched flax, being an average sample of the produce of at least half an acre, 3*l*., to David Patten, Dosgnays, Glasslough.

Second, 2*l*., to John Boyle, Springfields, Leeds.

The best bundle, not less than 16lbs. weight, of hand-scutched flax, being an average sample of the produce of at least half an acre, 3*l*., to David Patten.

Second, 2*l*., to James Robbs, Kiltona, Tulla, county Clare.

The best bushel of flaxseed saved by the grower, 3*l*., to David Patten.

Second, 2*l*., *no merit*.

For the best six hanks of handspun yarn, 1*l*., to Miss Nugent.

Second prize, *no competition*.

GRASS SEEDS.

The four best bushels of Irish-saved rye grass, 3*l*., to Hugh Caven, Castlebeck, Tuam.

The four best bushels of Irish-saved Italian rye grass, 2*l*., to Wm. Boyle, Glasnevin.

The judges appended the following note to their award in this class:—"The judges have examined with great care the specimens of flax, hemp, and cake exhibited by Mr. George Pye, of Ipswich, prepared under a patent for fulling of fibrous substances. They consider them very good, and the entire process deserving of the greatest attention. They also recommend that Mr. Pye should be awarded an honorary medal."

PRIZES FOR IMPLEMENTS.

Judges:—The Honourable Henry Trench.
J. G. Adair, Bellagrine, Ireland.
William Torr, Aylesby, Lincoln.

Consulting Engineer:—James Stirling, Edinburgh.

The best plough for general purposes, 5*l*., R. Gray, Belfast.

The best plough, adapted for deep ploughing, 5*l*., W. Graham, Dublin.

The best double mould-board plough, 5*l*., Eles and Co., Dublin, for Miller's plough

The best implement for breaking up the subsoil, 5*l*., R. Gray, Belfast.

The best heavy harrow, 3*l*., Richmond and Chandler, Salford, Manchester.

The best light harrow, 3*l*., Richmond and Chandler.

The best grubber, for four horses, 5*l*., R. Gray, Belfast.

The best grubber, for two horses, 5*l*., R. Gray, Belfast.

Second, 2*l*. 10s., W. Graham ; and *highly commended*.

The best drill grubber, 3*l*., R. Gray.

The best drill horse-hoe, 2*l*., R. Gray.

The best corn drill for general purposes, 8*l*. *No competition*.

The best corn drill for small occupiers, 8*l*. *No competition*.

The best drill for depositing seed and manure, 8*l*. *Not sufficient merit*, but the judges *recommended* a prize of 2*l*. to A. and T. Fry for their one-drill machine.

The best turnip drill, 3*l*. *No merit*.

The best machine for distributing portable manure broadcast, 5*l*. *None*.

The best liquid manure distributor, 5*l*., Jas. Sheridan, Dublin.

The best machine for sowing grass seeds and clover broadcast, 3*l*., Messrs. A. and T. Fry, Bristol.

The best hay-making machine, 5*l*., Smith and Ashby, Stamford.

The best horse rake, 3*l*., Smith and Ashby.

The best machine for hoeing or spacing land, 6*l*., Smith and Ashby.

The best farm cart, 5*l.*, James J. Mitchell, Portmahon House, Dublin.

The best set of hand implements used for the farm, 2*l.*, Edmondson and Co., 61, Dame-street, Dublin.

The best drainage tools, 2*l.*, Edmondson and Co.

The best assortment of drainage tools, 2*l.*, R. W. Bond, Killashee.

The best and most economical set of farm harness, 3*l.* *None.*

The best draining level, not exceeding 2*l.* in price. *None.*

The best general collection of implements, 20*l.* *Not sufficient merit.*

Second, 10*l.*, Richmond and Chandler.

THE DINNER,

Or "the Grand Banquet," as it is termed, took place on the Wednesday, in one of the railway buildings, where seats were prepared for at least four hundred. Not half of these, however, were occupied, and the room had consequently rather a desolate appearance. The Duke of Leinster, as president of the society, was in the chair, supported by his Excellency the Lord Lieutenant, and amongst others by the following noblemen and gentlemen:—Lords Castlemaine, Clancarty, Clonbrock, Dunlo, Erne, Mayo, Monck, and Talbot de Malahide; Judge Keogh; the Dean of Elphin; the Honourables G. Gough, G. Hancock, H. Hancock, M.P., R. Hancock, C. J. Trench, and H. Trench; Sir G. Bowen, Sir T. Redington, and Messrs. F. Howard, A. Croker, J. Grey (Dilstone), W. Torr (Aylesby), W. Donnelly, W. Madgill, Adair, Hussey, Maxwell, Campion, &c., &c.

After the customary loyal toasts, the President gave "The Lord Lieutenant, and Prosperity to Ireland." In replying to which his Excellency said—It is, indeed, very agreeable to me to have been able to pay this second visit to the annual meeting of this great society, and it seems to me that in very many points of view the Royal Irish Agricultural Society could not have selected a happier or more appropriate spot as the scene of its annual gathering than here at Athlone. Seated as it is on the greatest of our island rivers, upon the central point of that river—in its length itself nearly the centre of Ireland; and if not content with that gleaming liquid highway, now stretching out its new iron links first to the great fairs of Mullingar and Ballinasloe, and then onward to the splendid ocean and bays of Galway on the one side, and Dublin on the other, where could we have placed Irish agriculture upon a more befitting throne? Nor are there wanting some very gratifying points of contrast with the times that have passed away. This same majestic Shannon formerly separated Connaught almost as a distinct country from the rest of Ireland. Sometimes, indeed, Connaught was represented as being one side of a less polite alternative; and this very year the most brilliant of historians has described to us how the inhabitants of the same realm guarded those lines, and watched those fords, and reddened those plains in deadly conflict. Now the same stream washes the confines of ten peaceful Irish counties, and benefits them all; and so on this day brings together a large unarmed assembly to meet in peaceful lists where there is no more destructive rivalry than that between polled Anguses and Kerries. Still, on the subject of this great river, much pains have been taken of late years to heighten its natural capabilities by improving the navigation and by diminishing the overflow of its banks, to which it was so much subject. And I am not sure whether our great imperial ally might not borrow some very useful hints from us as to how to deal with those disastrous inundations which on a large scale have so recently occurred on the banks of the Loire and the Rhone. But with respect to ourselves, this deepening of the channels of rivers and straightening of their courses, and reduction of their waters to their summer level, preface the way most usefully for other drainage; and I rejoice to find how much of that beneficent work is going on over Ireland generally. I learn that, since 1848, 176,000 acres have been drained by the Board of Works, and I imagine more than double that area by private hands. The deep draining and surface draining on mountain lands have followed with results of a like benefit to the upland farmers and graziers. Now, I need not point out to the practical and enlightened men who now surround me how all-important drainage must be to a country like Ireland, where the insular climate must necessarily cause so great an abundance of moisture, and where we cannot always rely on those brilliant sunshines with which we were favoured during the last fortnight. Nor can I be debarred, even by the golden promise of those harvests which now gladden our eyes, from urging you to bear in mind that what Nature in her wise economy seems specially to have fitted this island for, is to be the mother of flocks and herds—to be, if I may say so, the larder and dairy of the world—to send rations of beef and bales of bacon to our armies, wherever they are; whether they are to be found, as many of my friends here to-night can speak of their being, upon the distant ranges of the Caucasus or elsewhere, and to send firkins of butter to every sea and harbour of the habitable globe. Now, this comparative abundance of moisture, which is the cause of fertility when duly regulated and turned to use, becomes the reverse when it is neglected. The natural conformation of the soil also points out the expediency of great attention to drainage. Your great mountain ranges surround on every side a great central limestone plain, and the strata of that plain present many obstacles to sufficient outlets for the rain that falls upon its surface. As an instance, this great Shannon itself, in its course of 140 miles, has only 160 feet of a fall. The same obstructions to the overflow of the waters present themselves in many districts of Ireland. Now, these are difficulties, contrived by Nature to stimulate the energy and reward the industry of man, which can be removed by science, industry, and skill. These efforts and improvements upon any large or pervading scale may be made by the liberality of Governments, or by expenditure of public funds; but the activity of any Government, and the outlay of any public funds of the State, however buoyant, can never be sufficient to control and ensure steady and continuous action. It is to private enterprise, guided and stimulated by such societies as that which I have now the honour to address, to which the country must mainly look for any sustained exertions. I know that I am not addressing any sluggish community upon these subjects. Within the last twenty years more than a million of Irish acres have been reclaimed from waste. In 1841, to eight millions of people there were thirty millions of cultivated acres in Ireland. Now, perhaps, more than one million have been subtracted from the population, and more than a million of acres have been added to our cultivated area. I wish, however, not to deal in any generalities on an occasion of this sort, but I will confine myself to actual contrast—to the actual progress as contrasted between the present year and that which immediately preceded it. I derive my information from the very valuable returns collected by the constabulary of this country, and this is a matter in which I conceive that you in Ireland have got a material start over your proud neighbours in England. These returns, as you are well aware, are collected annually, and, be it spoken to the great credit of the Irish gentry, farmers, and people, they are collected voluntarily, and rare indeed are the instances in which the information requisite is not supplied with the utmost alacrity and good-will. Well, I find from these returns, which have not yet been given to the public—the time has not quite arrived for their being so fully matured as to be given to the public—but, comparing this year with the last, there is a decrease of some amount in the growth of oats and barley, but there is an increase in the growth of wheat of 83,683 acres. The increase in green crops amounts to no less than 114,774 acres; and though I must admit that potatoes keep by far the largest item, yet I am in hopes that potatoes themselves are grown now somewhat more as a farmer's crop than with a view to the exclusive subsistence of the country people. The increase in flax, which I am especially glad to learn, covers 9,000 acres; and the increase of the whole extent under tillage this year, as compared with the last, amounts to 65,573 acres. So with respect to live stock: the increase in the number of horses amounts to 18,000; on the head of cattle, to 25,000; on the number of sheep, to 90,000. There is a very large decrease observable in pigs, amounting to no less than 250,000 head; but it is thought by those who are charged with the collection of these returns, that this is owing to their having been made up at an earlier period than usual, because I believe the farmers generally like to have their breeds of pigs to feed when they have the largest quantity of the farm produce to give them. However, that is a matter which must be tested by subsequent experience. Now, I have the pleasure of seeing opposite me, on this occasion, a most useful public officer, Mr. Donnelly. I cannot see him without remembering that both he and I have together striven to inculcate how much use it would be to effect a still larger destruction of roadside weeds. I don't like to go over ground which I have trodden before; I believe and I hope much has been done and is doing in this respect. I know some railway companies good enough to give very useful directions on this head, and I believe both they and the grand juries and the road contractors, and the proprietary at large, might do still more. I do not wish at all to treat even the unproductive pauper as a human weed. I should be very sorry to represent him in that light, but I am happy to say that this crop shows a great deficiency as compared with its state last year; for upon inquiring what are the numbers in the workhouses, I am informed that in the last week there were 17,711 fewer than in the same week of August, 1855, and that there were 1,571 fewer last week than in the week before. Indeed, there is no circumstance in the present social condition of Ireland which inspires me with more satisfaction than what I believe to be the rise—perhaps the gradual, but the general rise—perhaps the slow, but I believe certain, and I trust permanent rise in the general rate of wages. And if there are any here to whom that consideration has a less comfortable sound, I would entreat them to remember that low wages by no means represented cheap labour, and that no real or permanent prosperity can be expected in a country unless it is grounded upon a prosperous and contented tenant and labouring class. And only let me add, gentlemen, that it is thus, amid the harmony of classes, the cooperation of interests, the blessings of external peace and internal concord, that I trust the Royal Agricultural Society of Ireland is destined to pursue its honourable and beneficial career (loud applause).

Lord Erne proposed "the health of his Majesty the Emperor of the French." He had had the honour of being nominated one of the deputation to attend the Universal Show at Paris, and, as several gentlemen present could testify, the display had been magnificent, and admirably conducted. A complaint had been made by some parties, to the effect that the cattle had been too long kept in the Exhibition; but he could answer for it that, when leaving, they were in a great deal better condition than on arriving at the building: and the Parisians seemed also to be impressed with the belief that the members of the deputation likewise could not get too much to eat. Invitations were sent to them for all the great fêtes which took place in Paris, and by the order of the Emperor the best places were, on many occasions, retained for them. In a becoming spirit of Irish hospitality, for which the assembly would give them credit, the deputation invited in return all the heads of the French agricultural departments to dinner, and they had not neglected to drink in flowing bumpers success to the Royal Irish Agricultural Society. They likewise had the honour of an introduction to the Emperor of the French, who was himself the possessor of some of their native cattle—a flock of Kerries—which the Emperor said he prized highly from the good report he had always heard of their milking powers—for the assembly were aware that in Paris everything depended upon milk. The results of that show made him feel quite proud of his own country, for they obtained more prizes in cattle than almost any society in Europe; and not only did they get premiums for cattle, but for flax, roots, beet-root, sugar, and almost everything, whilst his friend Lord Clancarty and himself got no less than three gold medals. But of all the premiums which might have been obtained by the Irish gentry, he believed the one which they might look forward to gaining with the utmost facility was for weeds. Wherever a person travelled these might be found, but in no country were they so generally prevalent as in Ireland; and no matter how the question might be brought before the going judges of assize and the different railway companies, it was not until the landlords and tenants took the matter up and banished them from the land, as St. Patrick of old had banished the serpents, that they could be finally driven out of the country. This was a subject that should render them even greater admirers of the reigning dynasty in France; for by an article in the Napoleonic code, the existence of weeds was rendered severely punishable.

The Lord Lieutenant next gave "The Chairman," in very complimentary terms. In a brief reply the Duke of Leinster said — Since I last had the pleasure of meeting you a very arduous task has fallen upon me with respect to this society, and I am happy to say that from the very able assistance I received I hope that all our difficulties are overcome, and that the society will now flourish and prosper. It gave me very great pleasure, although the task was a troublesome one, to bring matters to the happy conclusion which has been arrived at. I return you, my lords and gentlemen, sincere thanks for the honour you have done me in drinking my health, and for the support you gave me upon that occasion.

Lord Clonbrock next proposed "The Army and Navy;" responded to by Major Hume. Mr. Justice Keogh proceeded at some length to "The Royal Agricultural Improvement Society of Ireland." In answering for which Lord Clancarty remarked, that after all the differences of the society had been arranged, it was a most auspicious circumstance that what might be termed its inaugural meeting should be held in the wild West, and honoured by the presence of the Queen's representative. Much had been accomplished for the general good of Ireland by the Royal Agricultural Society; but vast was the field which was yet open for its labours, and those of sympathising proprietors. The society had been supported well enough to reach the interest which was felt in its operations, and the affection entertained for its results; but still not sufficiently so to place its operations on a sufficiently extended basis. He could only, however, exhort them to go forward with steadiness and perseverance, and the result could not fail to be both gratifying and beneficial.

Lord Castlemaine introduced "The Royal Agricultural Society of England, and the Highland Society," Mr. Grey, of Dilstone, returning thanks.

Mr. Campion being called up to receive the challenge cup, in expressing his acknowledgments, mentioned that it was only within the last four years that he had turned his attention to the breeding of shorthorns; while he thought that the climate and peculiarities of Ireland were even more favourable to the rearing of such animals than any advantages England might enjoy.

"The Judges" being proposed by Sir Thomas Redington, Mr. Torr, in reply for himself and colleagues, impressed upon the meeting the necessity which existed of preserving intact, and uninterfered with by any notion of refinement, the long-woolled sheep so admirably adapted to that country. In ordinary cases culture and improvement were most valuable, and to be desired; but in this case the effect might be to thin the coat, which in this variable and humid climate would probably be attended with the loss of the sheep. He desired also to communicate a fact of the highest importance, about which no secret was made —he had to tell them that the implement-makers of England had combined and formed an organization to prevent competition in the implement class. In his opinion they were acting most ungratefully to the Royal Agricultural Society by pursuing such a course of conduct (*loud cries of Hear, hear*). Many of the large and eminent makers, in the pursuit of a very lucrative business, had risen to a position which they did not wish to lose, and feared that if they competed they might be beaten by some one of the little fellows. The originators of this combination attempted to explain away this resolution by the apparently magnanimous declaration that they did not want money prizes at all; but the truth was, that they desired to avoid competition and exhibition altogether. He held that where there was no competition there could be no sure test for decision upon merit. What these exhibitors wished was to make bazaars of the show-yards; and if the principle sought to be then enforced was upheld, Ballinasloe Fair might be said to resemble the Royal Agricultural Society in all respects.

"The Stewards," "The Local Committee," "The Railway and Steam-boat Companies of Ireland," with "The next merry meeting" at Waterford, brought the evening's proceedings to a close.

THE DIVERSITY OF MEASURES USED IN THE CORN MARKETS OF THE UNITED KINGDOM.

At the meeting of the British Association at Cheltenham, on Tuesday last, Mr. Danson read a short paper on the diversity of the measures used in the corn markets of the United Kingdom, and the consequent waste of labour involved in a comparison of their current prices. The evil is the same that caused the appointment of a committee of the House of Commons in 1833—"To inquire into the present practices of selling corn in the United Kingdom." The report of that committee recommended a remedy that seems to have been too complicated for adoption, and so had no effect. Taking the current circulars of upwards of 20 firms engaged as corn factors in as many of the principal corn markets of the kingdom, Mr. Danson enumerated the various measures upon which the prices were quoted, some having reference to capacity only, some to weight only, and some to both; and the weights used varying with nearly every change of locality. In London the bushel of wheat and all other grain is determined by the imperial measure; in Liverpool a bushel of wheat means 70lb.; in Birmingham, 62lb.; in Gloucester, 60lb.; and in Newcastle-on-Tyne 63lb. Again, in Birmingham, a bushel of barley means 49lb.; in Gloucester, 50lb.; in Leeds, 52lb.; and in Newcastle, 56lb.; and to extend the field of comparison only extends the variety of measures to be dealt with. The following evils were specified as resulting from the want of uniformity in these markets, where, since the promulgation of the Imperial Measures' Act, it is vulgarly supposed that tolerable uniformity has existed: 1. That in almost all cases in which a seller or buyer of agricultural produce has occasion to resort to more than one market, he is compelled to deal with more than one mode of ascertaining the quantity sold. And that while such differences answer no good purpose whatever, they check the freedom of commercial intercourse, afford facilities for the commission of fraud, often cause mistakes and disputes, and always involve trouble and loss of time. 2. That the quotations by which producers, dealers, and the public seek to inform themselves of the variations of the price of the same commodity at the same time in different parts of the kingdom, in order to their equalisation by the legitimate action of trade, are deprived of a great part of their proper utility in consequence of the weights or measures quoted for each locality being very commonly unintelligible in most others. 3. That the inconveniences thus arising are increased precisely in proportion as the commercial intercourse of each locality with every other in the kingdom is promoted by the improvement of road and postal communication, and hence are now much greater than they were when reported on by the Parliamentary committee of 1833, and are growing greater year by year.

[The following letter, which we extract from a weekly contemporary, is from one who has waded through the Blue Book of the Committee of the House of Commons, and who points out the rock which was a-head of the committee in its labours. We shall be glad if any of our readers, who may have considered this matter, will communicate with us, in order that, by discussion on the subject, some remedy may be suggested which hereafter may be made available.—Ed. M.L.E.]

TO THE EDITOR OF THE ECONOMIST.

Sir,—A paper has been read this week by Mr. Danson, in the Statistical Section of the British Association, on the diversity of measures used in the corn markets of the United Kingdom; and the subject is one of so much importance in an economic point of view, that I venture to trespass on your space upon it. At the same time I shall be glad to find that the appeal of some one more competent than myself has superseded the necessity of anything I can say on the matter.

Mr. Danson remarked that the inquiry of the Committee of the House of Commons in 1833 led to no reform; but it did lead to the production of a blue-book of great bulk, through the pages of which I wandered with much edification, and from the perusal of which I rose to lament that the production of the book seemed to have exhausted the powers of the Committee.

Sir, the error appears to be the mixing up the simple matter of delivery from the seller to the buyer so much *quantity* of corn, with another matter quite different, namely, the endeavour to supersede the necessity of any skill or caution on the part of the buyer as to the *quality* of the bulk he receives.

Sir, many people appear to suppose that weight *alone* is a test of quality. This, however, is far from the case. Every miller knows that a bushel of the finest Danzig wheat is not so heavy as a bushel of the finest English wheat, yet the Danzig is the more valuable of the two. Of the *same kind* of wheat *cæteris paribus* grown on the same soil, that weighing 64lbs. a bushel is more valuable than that weighing 63lbs. a bushel; but with different sorts, or grown on different soils, or after different crops preceding, say after grass or after potatoes, weight *alone* is not a test of quality.

What then is the test? We answer, sample. Show me a sample, and deliver so much bulk equal to sample. After that my intelligence, or that of my agent, will be necessary to watch, as the delivery goes on, to see that the quality equal the sample, and I may assist my judgment, if I like, by frequently ascertaining the weights of certain measures taken from different parts of the bulk. But supposing the quality of the whole bulk to be alike throughout, the surest way to ascertain the quantity of the bulk is by weighing, and not by measuring. It is not with dry goods as with fluids. We can measure a fluid accurately, because, except under great pressure, a fluid will not compress; but the quantity of corn in a bushel varies, according to the manner in which it is filled, as much as 5 or even 10 per cent., and this is not just to the fair trader. But inasmuch as hitherto "measure" has been the established mode of delivery in most of the old countries of Europe, and the fiscal regulations refer to measure, Government alone can make the necessary alterations. And every package ought to be weighed separately.

Hoping your attention will be given to this most interesti question, I have the honour to be your humble servant,

Northampton, Aug. 12, 1856. Looker-on.

BRITISH AND FOREIGN AGRICULTURE.

Agriculture is said to be in the ascendant not only in this kingdom, but in France, Belgium, and the whole European continent besides. Russia, we are informed, is about to develope her immense resources. Railways are to pervade the empire, and her exports in corn to become facilitated to the utmost to this country. Herein there is matter of grave reflection for the agriculturists of England; and at no distant date production may again exceed the demand. Population may increase, but the production of grain will fairly outstrip it in the race, if nations but set about the task in earnest.

England, with her limited area and worn-out soil, will not be enabled to compete with the great corn-growing districts of Russia and the eastern portion of Europe, unless encouragement be afforded on all sides. Farming with wheat at 80s. and with wheat at 40s. per quarter, are two very different problems to work out whilst rent and expenses remain nearly the same, and the difficulty only can be met by increased production. This, we are told on all hands, may be readily—nay, *easily* effected; and granting that such may perhaps be the case upon a certain portion of the farms throughout the kingdom, yet upon the larger portion we believe, and with some degree of confidence, that no great amount of increase can further take place. This is no vague assertion: we have fairly and candidly investigated the subject, and believe that upon a moiety of the whole arable land of the kingdom as much corn is already produced as can be calculated upon for the future; upon the other moiety the produce may be increased, say 50 per cent.—equivalent to about 20 per cent. upon the whole. The cultivation of vegetable crops and grasses may, doubtless, become largely increased; but Nature sets a limit to the production of grain. Stimulants, we know, counteract themselves; good farming steadily persevered in for a series of years together will alone accomplish the object, and whenever a large quantity is sought to be attained, it must be accomplished by steadily persevering in a regular course of good farming rather than by unduly forcing the land towards its accomplishment.

Nature's store-house of grain is in her virgin soils; inexhaustible and almost unlimited in extent, the plough alone is needed to bring them into operation. England must effect by cultivation alone what the whole of eastern Europe can effect by turning the soil. The cost of cultivation and rent together in England very nearly approach the entire value of the crops. In those states the expenses are merely nominal. Land once exhausted is suffered to remain till Nature accomplishes the task of restoration; and wheat at 25s. per qr. on the spot is there relatively greater in amount than wheat at 50s. per qr. here. So wide a difference cannot be met by cultivation alone; the two prices must approximate, and the difference of cost of transit and commission will alone protect the British grower.

With these remarks, we proceed to investigate how far the difficulties can be met. That it must be by increased production, is but too evident; and we must look to the operating causes by which it is to be effected.

At the head of agriculture we have the Royal Agricultural Society, like royalty itself, too circumscribed in its own greatness to be so really useful as it ought to be. "Science with practice" it assumes as its motto; but in operation the science is found in its Journal, and the practice in its subscribers. Without any desire to condemn, where so much has been done well, still we are not disposed to remain silent whilst the whole world is contending against us; and we point to France alone, by way of example. In two short years she has made a greater advance than we have done in twenty; and with that spirit with which she has commenced, bids fair to outstrip us in the race. And how is this? Because she opens her way by a combination of talent and liberality. She rewards her advocates, and stimulates her sons by the glorious reward that she holds up before them. Under the direction of one man, in a few short years she bids fair to approach the agriculture of England itself, and to convert our finest breeds of cattle and sheep to her use. Twelve hundred guineas for a bull not to be equalled in the world appears a monstrous sum indeed; and to persons in this country, who have to toil for every shilling, no idea of the boundless extent of Australian gold exists—a mere nugget, abstracted by a few strokes of a pickaxe, purchases an animal that has taken lives to produce, and, if measured by its proper standard, is invaluable.

Pure short-horns are not so very plentiful in this country at the present moment as to allow of any great exportation, without serious injury. Let us look to our own soil, and see how far they are disseminated amongst us; and we ask, are there not whole districts, nay, almost whole counties, where they have never yet been seen? Mongrel breeds alone exist in every direction, and, taking a wide extent of country around Chelmsford, and examining its stock, but little indication was presented of their having been introduced. In every herd we examined, whilst travelling for information, scarcely any one was found consisting of animals of the same breed; and, so far as we obtained information, with three or four exceptions only could we ascertain that any were kept within many miles of that place. We mention this not in disparagement of Essex, as we believe it is also pretty much the same throughout the United Kingdom, and we therefore argue that, whilst such is the case, we are doing ourselves a lasting injury, and one that we shall also never recover, under existing circumstances.

Once, we have been told, a luckless boy cut open his goose to secure her golden eggs; but we are acting a greater folly ourselves, by parting with the goose and her eggs together. Let our Agricultural Society look to this: if practice is expelled her council, it will reach her from without. Her attention should be directed to the welfare of the agriculture of this kingdom; its fostering hand should yield it support and encourage its growth; it should direct its influence not only to the improvement of its animals, but to their dissemination into districts where more required. Some, at least, of its finest cattle and sheep should remain upon the spot to mark its progress, and not, as now, be congregated, and no sooner exhibited than purchased and shipped to foreign lands, where more liberal encouragement exists. England, by the indomitable spirit of its cultivators and breeders, has achieved a pre-eminence in stock that no other nation has arrived at; but let it be remembered that other nations are starting in the race with the very animals that we have produced, and, encouraged by their respective governments, as well as assisted by immense finances, under the direction of men of talent selected and paid liberally by them for acting in their behalf, it may not be long ere we become overtaken and surpassed.

THE AMERICAN EXPORT FLOUR TRADE.

The American export flour trade is growing into immense importance, and its statistics are therefore deserving of close investigation by our farmers and millers.

We desire to place before our readers a few facts connected with the trade, drawn from official documents and mercantile reports, apparently of a trustworthy character. It may be well, however, to premise that, owing to the wide extent of country embraced in the returns, and a slight disposition on the part of American authorities to magnify their agricultural resources, United States statistics cannot always be strictly depended upon.

Our imports of American flour would seem to have been declining in the last few years; but late returns again show an increase in the imports, and we now receive a larger quantity of American wheat, preferring to grind it ourselves. The Continent, the West Indies, and other quarters have also been good customers to the United States for flour. If we have, however, taken less flour, we are at present importing more American wheat.

The total imports of flour for home consumption in the last three years and a-half is shown by the Board of Trade returns to have been as follows:—

		Cwts.
1853	....	4,646,409
1854	....	3,679,699
1855	....	1,922,101
1856	(6 months).	1,607,456

Of wheat from all quarters the imports have been:—

		Qrs.
1853	....	4,951,310
1854	....	3,468,746
1855	....	2,686,188
1856	(6 months).	1,342,028

The wheat produce of the United States last year was estimated at 165,000,000 bushels, which, taken at the value of 1½ dollars per bushel, would be worth nearly £50,000,000 sterling. In 1850 the wheat crop was but 100,485,944 bushels, which, at the average price of 1 dollar per bushel, amounted to about £20,100,000; so that there is an immense increase the last five years both in production and value.

According to the latest returns received to-day, the shipments of wheat from all the American ports to Great Britain and Ireland, between Sept. 1 and the middle of July, amounted to 5,103,353 bushels, and to the Continent 2,250,312 bushels; of flour 1,208,060 barrels to England, and 649,241 barrels to the Continent. A large quantity of rye has gone to the Continent, and the exports of Indian corn and meal are above those of the preceding year. But we confine ourselves in the present inquiry chiefly to wheat and flour.

It is in the great West, in the regions and States about the American lakes, that the increase of grain production is most apparent. The fertile States of Michigan, Wisconsin, and Iowa, and the territory of Minnesota, extend over 156,000,000 of acres; an area more than double that of Great Britain. The central west, again, includes the important States of Ohio, Indiana, and Illinois.

One instance might suffice to mark the extraordinarily rapid advance of cultivation, production, and extension of trade. Chicago, a city which fifteen years ago could not number 4,000 inhabitants, has now a population of over 85,000 souls; and is, probably, the largest exporting grain market in the world. It received last year 20,488,000 bushels of grain, and shipped 16,633,813 bushels, being an increase of 33 per cent. over the previous year. The receipts of flour there increased from 158,575 barrels in 1854, to 240,662 barrels in 1855; and 79,650 barrels were manufactured there. The shipments increased from 107,627 to 163,419 barrels, and the consumption from 116,948 to 156,893 barrels. The receipts of wheat show a much larger increase, viz., from 3,038,955 bushels in 1854, to 7,535,075 in 1855, and the shipments from 2,106,725 to 6,298,155 bushels. The receipts of Indian corn have increased from 7,690,753 bushels in 1854, to 8,533,377 bushels. The receipts of other produce are in like proportionate increase.

In the far west city of St. Louis, Missouri, there were manufactured last year 600,000 barrels of flour, besides nearly as much more received from other places; this was equal, therefore, to the produce of 5,000,000 bushels of wheat. To come to the towns nearer the sea-board, Rochester, in the State of New York, is an important flour-manufacturing town, having about 130 run of millstones employed, and a quarter of a million sterling invested in flour-mills and machinery. It received last year 2,000,000 bushels of wheat, and sent out 602,000 barrels of flour. Buffalo imported from the Lakes 936,761 barrels of flour, and more than 8,000,000 bushels of wheat, besides 8,711,230 bushels of Indian corn and 3,000,000 bushels of other grain. Oswego also shipped, by canal, 2,698,887 bushels of wheat and 398,637 barrels of flour.

If we reconvert our imports of American flour (as stated above) to wheat, at the rate of five bushels to the barrel, we have 9,500,000 bushels of wheat, besides 6,000,000 bushels of Indian Corn, and 5,719 barrels of meal, as the aggregate exports from the United States to Great Britain, for a little over eight months. To the Continent the shipments have been rather more than half these amounts, besides 1,713,121 bushels of rye.

In the official year ending June, 1855, about 1,250,000 barrels of flour were exported from the United States, exclusive of grain and other breadstuffs.

The quinquennial value of the flour exported from the United States is shown in the following figures:—

	Dollars.	Per barrel.	
1825	4,212,127	5 d.	37 c.
1830	6,085,953	7	25
1835	4,394,777	6	0
1840	10,143,615	5	37
1845	5,398,593	4	51
1850	7,098,570	5	0
1855	12,625,000	10	10

The high price of last year has not been maintained, and a reduction of more than 25 per cent. in the value of flour has taken place.

The flour-dealers, and others interested in the shipment of breadstuffs from New York, have recently been carrying out extensive alterations in the established practice of inspection of flour and meal. They have formed an association to lower, in some degree, the standard of inspection; and it would be well for our importers to watch somewhat closely the result of this proceeding. It is on a par with the endeavour to do away with the Government brand on Scotch-cured herrings, which has established for our curers so superior a character and so extensive a market on the Continent. The reduction of the standard of quality in flour in Boston and New York, and which is now mooted in New Orleans, has been adopted with a view to attract a larger share of trade. But, if we are rightly informed, the quantity of inferior flour has been greatly increased since the change of brand. As a consequence of this injudicious alteration in the standard, we find an act introduced into the Canadian Legislature to repeal the existing act, and bring the standard of inspection for flour down to the level of that of New York, on the following substituted terms:—

"In branding or marking the different qualities or descriptions of Flour, the same shall be designated as follows, that is to say: that of a very superior quality by the words *Extra Superfine*; that of the second quality by the words *Fancy Superfine*; that of the third quality by the word *Superfine*; that of the fourth quality by the words *Superfine No. 2*; that of the fifth quality by the word *Fine*; that of the sixth quality by the words *Fine Middlings*; that of the seventh quality by the word *Pollards*; and the quality called Farine Entière by the letters E N T., by which latter description of flour shall be understood the whole produce of the wheat when ground, excepting the coarse bran and pollards. And in branding or marking the different qualities of Rye Flour, Indian Meal, and Oatmeal, the words *Rye Flour, Indian Meal, Oatmeal,* shall be plainly branded or marked on each and every barrel or half barrel, to designate the grain from which the same is made; and the qualities shall be designated as follows, that is to say: that of very superior quality by the word *First*; that of the next inferior quality by the word *Second*; that of the next inferior quality by the word *Third*; and that of the lowest quality by the word *Unbrandable*. And when the grain from which Flour and Meal of any description is manufactured had been previously kiln-dried, the same shall be branded and marked by the packer on each and every barrel or half-barrel, either at length or by the word and letter *Kiln D*."

We see it stated that large quantities of wheat are still in the hands of Canadian farmers, who were not wise enough to sell when prices were at the highest, and somewhere about 5,000,000 bushels, are therefore in stock. The export of wheat from that Province last year was 3,193,748 bushels, against 1,442,677 in 1854. The shipments of Canadian flour compared with 1854 show a decrease of 7,464 barrels. The port of Toronto last year shipped 1,378,487 bushels of wheat.

NEW MODE OF MAKING BREAD.

TO THE EDITOR OF THE MORNING POST.

SIR,—May I solicit the favour of your inserting this letter, or as much of it as you think proper, to give your readers a correct idea of the extraordinary circumstance of reducing the price of bread?

The fact is, the bread distributed at Tiptree on Saturday last, July 19, was made by the cottager's wife at the Experimental Gardens, Reading, Berks, in my presence.

It consisted of one-half flour and one-half mangel wurzel. The mangel wurzel was grown this year on an entirely new system of cultivation—air and liquid to the roots of plants—which will make sewage a saleable property.

The present mangel wurzel and flour may not be estimated to reduce the price of bread and pastry above 35 per cent. When the mangel wurzel grown on this system is ripe, it will reduce the articles referred to nearer 50 per cent. Poor common land, a fair depth of soil, however poor it may be, will yield from 40 to 60 tons per acre. Parsnips, carrots, and other roots will also be applicable, produced by the same system.

The garden at Reading, near the railway station, is worth going hundreds of miles to see. My motto is, "Do good, and communicate."

I most respectfully invite all persons, rich or poor, properly conducting themselves, to see for themselves.

The garden is, bed for bed, new and old system—hops, wheat, roots, &c.; potatoes growing in sawdust.

The wheat ears were, at Tiptree, new system, about two inches longer in the ear than the old system.

Yours, &c.,
EDWARD WILKINS.
Proprietor of the Experimental Garden,
July 22, 1856. Reading, Berks.

INDUSTRIAL RESOURCES OF RUSSIA.

(*Concluded from page* 115.)

It has been observed that bread forms the principal food of the inhabitants of Great Russia. The potato is not yet appreciated by the natives, but is cultivated by the German colonists. A favourite dish with the peasantry is a porridge made with the meal of buckwheat. Moscow, in proportion to its population, consumes more meat than London, but this is exceptional, for, as a general rule, the consumption of animal food in Russia is far less than in the countries of Western Europe; and it is partly accounted for by the fact that the Greek Church imposes not less than twenty-eight weeks of fasting in the year. The people eat large quantities of cabbage mixed with soup, and cucumbers and mushrooms are relished as accessaries to a repast. The popular beverage is a spirit obtained from rye, called KWAS, and an inferior brandy. Wages, considered in their purchasing power over commodities, which is the true test of their sufficiency or insufficiency, are high in Russia, which is proved by the condition of the people. "The daily revenue of the humblest labourer," says Storch, "is superior to his wants, without cutting him down to the bare subsistence of a prisoner. His clothing is always complete; and none but beggars, who are extremely rare, want the necessaries of life. Every Russian has his sheep-skin garments; and we never see in Russia, as we do in other countries, even the poorest, without warm apparel, during the cold weather. The most needy have also a lodging well warmed." The large work of Storch, from which the preceding extract is taken, was published in 1801, but more recent travellers confirm his testimony. Kohl certifies to the comfortable condition of the humbler classes. "In no town in Russia," says that intelligent writer, "do we behold that shocking contrast between misery and luxury which exists in all the cities of Western Europe, although the distance between the rich and poor is great. That spirit of avarice which covets our neighbour's goods is not yet kindled among the Russian people. Every one has sufficient food, though it may consist of cabbage and coarse bread; and sufficient clothing, though it may consist of sheepskins. The districts of St. Petersburg, inhabited by the working classes and the *black* population, are not repugnant to the eye, though they are not attractive." It is in the pastoral districts of Russia that the true Muscovite is seen. The dietary is coarse, but it accords with the primitive life of man ere luxury was introduced; and it is on the boundless plains, where the sheep crops the scanty herbage, that the Asiatic descent of the genuine Russ is visible. Here beauty of the highest order is the gift of men and women. "If these young virgins," says De Custine, "with features similar to those of Greek madonnas, had the tournure and the vivacity of movement observable in the Spanish women, they would be the most seductive creatures upon earth." In these same pastoral districts, De Custine saw those beautiful bald heads which reminded him of the heads of Jehovah, painted by the first pupil of Leonardo Da Vinci, which he once thought were entirely ideal conceptions, but recognised in the living Muscovite. He thus speaks of them with enthusiasm :—"Seated in the thresholds of their cabins, I have beheld old men, with fresh complexions, unwrinkled cheeks, blue, sparkling eyes, calm countenances, and silver beards glistening in the sun round mouths the peaceful and benevolent smile of which they heighten, who appear like so many protecting deities placed at the entrance of the villages. The traveller, as he passes, is saluted by these noble figures, majestically seated on the earth which saw them born. Truly antique statues, emblems of hospitality which a pagan would have worshipped, and which Christians must admire with an involuntary respect, for in old age beauty is no longer physical; it is the depicted triumph of the soul after victory."

However exaggerated in tone this pasage may be, it is quite true that if we desire to gaze upon the pure image of patriarchal society, we must seek it among the Russian peasants of the pastoral districts, who never leave the scene of their birth; for those who come to the towns, and work there, soon lose their primitive characteristics, and certainly they never descend to their children. We pass from the social condition of the peasant and cultivator of the soil to that of the mechanic and artizan. According to Kosegarten, a weaver in the country receives three kopeck in copper money for weaving an arschine of cloth, which measures about 26 English inches, or, to give the exact proportions, 100 arschines are equal to 77·77 English yards; the weaver only produces from 10 to 12 arschines in a day. His daily wages, therefore, range from 30 to 36 kopecks, or from 4d. to 4½d. English money. To prevent mistake, the reader is here requested to bear in mind that whenever we mention the kopecks or rouble, paper money is to be understood, unless we add the word "silver." The metallic or silver rouble is worth 37½d. in English money. Now among the class of country weavers to whom reference has just been made, the standard of dietary is very low, consisting of cabbage grown on their own ground, for every peasant has some land of his own, on a tenure hereafter to be explained. These people seldom buy anything, and they are supposed to live at the rate of five kopecks per day. But the condition of the mechanic and artisan, living in towns, is different, because the scale of living is dearer and the rate of wages is proportionate. Provisions are brought to St. Petersburgh from a long distance, and the carriage along bad roads adds largely to the cost. Wages are one-third higher at St. Petersburg than at Moscow. In the latter city working men receive 25 to 30 roubles monthly, but in the former they are paid from 35 to 40 roubles. The rouble is a fraction more than 10d. English. It is stated in Kelly's Cambist that "by a ukase of the 13th July, 1839, the former money in banco, or paper roubles, was ordered to be discontinued, and the accounts kept in them to be exchanged, in their amounts, to silver roubles, at the rate of 350 paper roubles for 100 silver roubles." At Moscow then we may put down the wages of the mechanic and artisan at 20s. 10d. to 25s. English per month, and in St. Petersburg at 29s. 2d. to 33s. per month. At Koursk, which is in the agricultural zone already described, men only receive 10 to 15 roubles per month, and women but from 6 to 8; but their living does not cost them more than 2 roubles per month. Kosegarten states that many of the factory workers at Moscow take home annually 300 roubles, but these must be very skilful and very economical, for there are only 240 to 260 days in Russia in twelve months, in consequence of the numerous festivals of the Greek Church, which are rigorously observed.

It has been shown in the first article of this series that Russia is very thinly populated, comparing the numbers of the inhabitants with the area on which they reside; and that even where it is densest, it is very far below the average of Western Europe. Hence it appears that its industrial resources, derivable from agriculture, are but scantily developed. Immense tracts, capable of yielding an ample return to labour, are still in a state of nature, and injudicious efforts to force manufactures into a premature existence have greatly injured the progress of rural economy. It is a matter of frequent complaint, and it has been urged since the reign of Catherine the Second, that the rich nobility, too fond of parade, keep an immense retinue of servants both in town and country who would be better employed on the fields. These domestics are their slaves, not receiving wages, so that the cost of their maintenance is the only direct charge incurred by their owners when they compel them to assume the livery. In the time of the Emperor Alexander the First, the chief of the opulent family of Scheremeteff kept six thousand men-servants in his various domestic establishments. On an average the nobility have thirty or forty domestics in their mansions at St. Petersburg, but in the country the numbers run to 500 and 600, for there are no shops there, and the great man must carry with him butchers, bakers, tailors, shoemakers, &c., besides footmen and valets. When Storch wrote, he says that Russians who lived at the same rate as Germans, always had five times as many servants. These domestics, originally taken from the plough, acquired habits of idleness, and never returned to rural labour.

Every peasant pays a capitation tax to his lord, which is called an *obrok*. This varies in amount. During the reign of Catherine the Second, the obrok of the crown peasant was three roubles annually, and of the serf of the nobles five roubles. The owner of the serf may give him a passport to live in a town, and, as we have seen, he may there earn good wages; but the owner only does this by largely increasing the capitation tax. The serf consents to pay it, for he is still the gainer; it is certain, however, that agriculture loses the services of the peasant. The cupidity of the lords encourages this immigration into the towns, they deriving a larger sum from the passport than from the mere obrok; moreover, the obrok may be paid in kind, whereas the passport is always paid for in money. When the serf returns to his village, as he generally does at Christmas, and displays his roubles, the other serfs desire to try their fortune in the towns, and are permitted to depart on paying for the passport. Thus vigorous men desert the plough, and agriculture languishes. It was under these circumstances that Catherine the Second put forward the following *instructions*, addressed to a Commission engaged in reforming the laws:—

"Russia, far from having a sufficiency of population, possesses an immense extent of territory which is uncultivated and uninhabited. How flourishing would this empire become, if by wise regulations we could prevent this loss! It appears, moreover, that the new system adopted by Russian gentlemen of levying their revenues, diminishes the rural population, and is fatal to agriculture. Almost all lands now pay their dues (obrok) in silver. The proprietors, who never or rarely live upon their estates, tax each peasant from two to five roubles a-head, without troubling themselves as to the means of the peasant to obtain the coin. It will be very necessary to enact by law that the owners should use more discrimination in placing burdens upon their peasants, especially so as to remove the smallest number from their dwellings and families. By such judicious arrangements agriculture and population would gain; whereas at present large numbers of husbandmen are absent from their homes, and have been so for fifteen years, and tramp over the empire from town to town, in the endeavour to earn by their labour the charges imposed on them."

The great obstacle to industrial progress throughout the Russian empire is serfdom, which treats men as cattle, and prostrates their best energies. It is but justice to the late Emperor Nicholas to acknowledge the great and generous efforts he made to improve the condition of the peasantry. In this good work he was ever thwarted by his nobility, and he is not to be blamed for what he left undone, but to be praised for what he accomplished. In our next article we shall enter somewhat fully into the question of Russian slavery, and the modifications it has recently undergone.

Liberty is favourable to production. The free man works with a will, because he feels that he is working for himself; and the certainty of reward is a more efficient stimulus to industry than the infliction of the lash. In estimating the industrial resources of any country, it is necessary to examine the social condition of the labouring population as well as the capabilities of the soil, the richness of the mines, and the facilities of transit by land and water. The benevolence of the Deity has supplied all the raw materials on which man can exert his strength and skill in the animal, vegetable, and mineral kingdoms; but ignorant or vicious legislation may render those precious gifts comparatively unproductive. Despotism has built up pyramids, but it never built up a man, though it has frequently lowered him to the level of a beast of burden. Such is unhappily the case in Russia, where the vast majority of the people are slaves, liable to be sold with the land on which they were born, and classified in the catalogue of the auctioneer with the cattle and the farming implements; but, strange to say, many of these slaves possess wealth and some are opulent. The system is unique, and it may whet the curiosity of our readers if they are at once told that the crown peasants in their rural communities enjoy universal suffrage and vote by ballot.

Russian serfdom is a comparatively modern institution. It did not exist while the race of Rourïk, who founded the monarchy, filled the throne. That race is called the "Grand Dynasty;" it reigned during eight complete centuries, and gave fifty-two sovereigns to the Empire. It was extinguished on the 15th of May, 1591, by the murder of the young Czarewitch, Demetrius, by his ambitious maternal uncle, Boris Godounof, and it was that assassin who founded the slavery which Peter, called the Great, consolidated.

In the primitive ages of Russia the whole of the land was in common, belonging to the State. The people were nomadic, without any fixed residence, and no individual had any exclusive ownership in a single rood of land. All the Russians then lived in a purely pastoral state, being herdsmen and shepherds; when they passed into the agricultural state, they formed village communities, which still exist. Society then was wholly patriarchal, and that characteristic has left indelible traces to our times. The Czars gave life estates to their bravest warriors and most intimate friends, but never hereditary possession. The only slaves were captives taken in war, those reduced to servitude by judicial sentence, and those who voluntarily sold themselves into bondage. Those now known as serfs or peasants, or by the more general title of peasant serfs, were originally free, and received wages when they worked for an employer; and it is curious to observe that by the old laws, partly founded on tradition and immemorial usage, and called the Yaroslavian statutes, from the name of the Grand Duke Yaroslaf, trial by jury, consisting of twelve men, existed—an institution derived from the Northmen, called Varangians by the Russian chroniclers, who followed the fortunes of Rourik.

Such, speaking generally, was the condition of the Russian people till the usurpation of Boris Godounof. As one of the results which followed the revolution that ensued on the murder of his nephew, the peasantry flew to arms, some enlisting under one leader, some under another. Boris won over the church to his interests, but he was opposed by the Boyars or nobles. To prevent the people congregating in masses, he passed an ordinance to confine them to their villages; and, by a second law, he forbade the employers to dismiss any persons who were working for them by contract. Thus the free serfs were bound to the soil, and their masters were bound to keep them, and in this manner slavery was first introduced. It may here be observed that the Boyars were not faithful in observing their contracts, for though they hired labourers for the year, they capriciously dismissed them if the harvest failed. Many of the serfs, therefore, approved of the law of Boris, which assured them a maintenance at the cost of their employers. In those days famines were frequent. The old chroniclers record the fact that in 1601 and 1602, the Russian peasants became cannibals, eating their wives and children. Levesque states that at this epoch 127,000 dead bodies were heaped up in the streets of Moscow, victims of starvation. These dreadful circumstances made the law of Boris acceptable to the free serfs, who did not foresee its consequences, but they resisted the ordinance which deprived them of locomotion by confining them to their villages. It falls not within our province to depict the revolutions and civil wars which accompanied this restriction on rural migration. The enactments of Boris continued in force, and when Peter the Great made landed estates hereditary, the enslavement of the cultivators of the soil became complete; and all their efforts to shake off the yoke since that period have been unsuccessful. Under Catherine the Second they revolted, when Pugatscheff, the celebrated Cossack of the Don, raised the standard of freedom, for which act courtly writers have branded him as a rebel. Storch relates an incident in the life of Alexander the First, which shows his detestation of slavery. A nobleman who enjoyed the personal friendship of the Emperor requested an estate and the serfs upon it as hereditary possessions. "The peasants of Russia," said the Czar, "are for the most part slaves. I need not expatiate upon the degradation of such a condition. Accordingly, I have made a vow not to augment the number; and I have laid it down as a principle that I will not give away the peasants as property." These were noble sentiments, uttered when he was a liberal, in the early part of his career; but after the war against France, he spoke a different language to those heroic serfs who repulsed Napoleon and saved his throne. When the French entered Moscow he appealed to his people to defend their ancestral hearths and expel the invader, promising them liberal institutions as the reward of their valour and patriotism. They responded to the appeal, and the result is recorded in history; but when they demanded the performance of the imperial promise, the infamous ukase of the 10th March, 1813, was published, proclaiming that "as the peasant serfs constitute the lowest class of the inhabitants of Russia, and do not enjoy any privileges, they cannot be deprived either of honour or good name." When he afterwards turned the provincial governments into military divisions for the purpose of establishing military colonies, the peasants revolted, when their villages were assaulted and carried by the bayonet. Many cut the throats of their children and terminated their miseries by suicide.

In regard to serfdom the Emperor Nicholas was a reformer, earnest and sagacious, and, in this respect, his policy did credit to his head and heart. The peasants, effectually cowed and down-trodden, had so far lost the tradition of the earlier freedom of their class, that they adopted this humble formula: "We serfs belong to our lords and masters, but the land of the country belongs to us. The land is there to feed us; it belongs to the people and the Czar, who has only given the nobles the usufruct." This is partly true of the system as it existed prior to the reign of Peter the Great, but it must be remembered that he made the land hereditary, and thus gave the owners more than the usufruct. Arbitrary power, ever insatiable, always seeks to push its boundaries to the verge of injustice; and it was proved in 1837 that the exactions of the lords had become so excessive that a large proportion of the peasants were absolutely destitute, without ploughs or harrows, or cattle to till the soil. It was under these circumstances that in 1838 the Emperor Nicholas appointed a Board of Inquiry, and authorized it to make a searching investigation into the condition of the serfs, not only in the interests of humanity, but also in the interests of agriculture. The result of the labours of this commission was a new code, which, while it recognised the system of slavery, endeavoured to mitigate its horrors; but it was confined to the crown lands.

The first object was to organise the peasants into sections. Accordingly, it was enacted that each village municipality should consist of 1500 inhabitants, and be ruled by a communal administration; while each canton should number 6000 souls, and be ruled by a cantonal administration. It may astonish the reader to be told that the president, assessers, registrars, inspectors, and other functionaries of these serf communities, are elected by and out of the serf class in public assemblies, and still more, that the vote is taken by ballot. Justice is here administered by *men of conscience* in courts of reconciliation; but if this process fail through the obstinacy of the litigants, the case is taken to the regular tribunal, where the judge gives his sentence in writing, and he must do so on the day of trial, so that delay and cost are prevented. On the crown lands every male has his lot or portion of land, and his tax is fixed, so that the receiver can exercise no arbitrary extortion. Model farms are established at the expense of the government, where the young peasants are taught both the science and the practice of agriculture; and civil engineers and skilled architects are periodically sent through these districts to construct or repair bridges and erect or improve cottages. To guard against famine, local granaries are formed in each village community, to which every communist must contribute at the rate of two tschetverts of corn in every eight years. These reforms do honour to the memory of the Emperor Nicholas, and he was justly beloved by the serfs, who regarded him as their father as well as their Czar.

It has been urged by those who never felt the iron that freedom, for though he is not owner of the field he cultivates penetrates the soul of the slave, that the serf does not desire or of the house he inhabits, yet he is free from all anxiety as to his material existence; his master must find him seed corn when the harvest fails, oxen for his plough if the beasts of burden die, and a new house when the old one is burned. But the answer to these narrow views is that the serfs murder their lords when they have the opportunity, and are always expecting their emancipation from the Emperor. They are certainly better off than the slaves in the United States, for they can only be sold *with* the land, and if they change masters they do not change their homes; if they are drafted into the army, they are free at the end of military service; there is no disruption of families; no breeding slaves for sale by the hammer of the auctioneer; none of the abominations which render New Orleans a hell on earth to those of the gentler sex who have "the fatal gift of beauty." But, as Lawrence Sterne has said, "Still, slavery, thou art a bitter draught! and though thousands in all ages have been made to taste of thee, thou art no less bitter upon that account! Come then, Liberty, thrice bless'd and gracious Goddess, whom all in public or in private worship, whose taste is grateful and ever must be so, till Nature herself shall change! No tint of words can change thy snowy mantle, nor chymic power turn thy sceptre into iron! With thee to smile upon him as he eats his crust, the swain is happier than his monarch!"

It has already been remarked that there are no country gentlemen in Russia, in the sense in which we understand the term; no Epsom, or Ascot, or Doncaster, or Newmarket races; no yachting or boating clubs; no Melton Mowbray: nor is there a middle class in the English sense: worse than all, there is no law; spies abound; even silence is suspected, and suspicion leads to Siberia. The Czar is all-in-all in his vast and gloomy empire; he stands supreme among his slaves, whether they be decorated with stars or squalid in sheep-skins. Here manhood pines; for it has no voice, no will, no rights. This degradation of humanity is fatal to productive power. There are some wealthy merchants who are yet serfs; but their lord and master may order them to come out of the exchange or the counting house, get up behind his carriage, and act the part of footmen. Now deceit is the weapon of the slave, and deceit and dishonesty are twins. The Russian trader is noted for bad faith. As a serf, he can have no self-esteem, and he would laugh at a monitor who advised him that honesty was the best policy. No wonder then that the industrial resources of Russia are slowly and imperfectly developed, for Russian industry is a giant in fetters. But we must describe its character with more detail and minuteness.

The despotism of Russia is ubiquitous. Its iron hand presses as heavily on the marts of trade as on the political departments of the STATE. It carries the protective principle to the extreme points of interference and regulation, and chains every element of commercial freedom. Imperial ukases classify the wholesale and retail trade, and impose distinctive qualifications on those who engage in either. There are rules for the foreigner, rules for the natives. The law of apprenticeship is rigid and improvident. Merchants are ranged in guilds or corporations. Private action is fettered in all directions; and an odious police, at once the tools and parasites of autocracy, are ever throwing impediments in the way of exchanges, that they may eke out their scanty salaries by extortions. Little stability is to be placed in the faith of contracts, and legal decisions are too frequently influenced by bribery. Under these conditions, it can excite no surprise that the industrial resources of Russia are imperfectly developed. Moreover, the Russian, apt enough for retail business and small transactions, utterly fails in large operations. The consequence is, that the foreign trade, excepting that with Asia, is almost entirely in the hands of British and German merchants. During the reign of Catherine the Second, there were thirty to forty Russian commercial firms at St. Petersburg; Haxthausen reduces their present number to three or four.

So early as the year 1276, the cities of Novogorod and Pskof had mercantile relations with Riga, Revel, and the eighty-five cities and towns which formed the Hanseatic League of Germany. Novogorod, the most ancient city in Russia, traded with the peoples inhabiting the shores of the Black Sea; and the Greek Emperor Constantine Porphyrogenetes, who wrote in the ninth century, speaks of the traffic it carried on with Constantinople during his reign. But in the days of its commercial opulence, Novogorod was a republic, and its commercial opulence was the result of its political freedom; for, without the liberty of thought and action, production languishes. The Czar Ivan the First ruined this flourishing emporium, suppressing its popular assemblies, and annihilating its democratic institutions. In 1509, Pskof shared the same fate. The German merchants were expelled from both cities, and the great counting-house of the Hanseatic League was closed.

In the fourteenth century, Venice and Genoa acted on the trade of Russia. Their merchants had establishments at Azof and Kaffa, and they supplied the southern parts of Europe with valuable commodities brought from India, Persia, and Arabia, through the Caspian Sea and the river Volga. From Astracan they were taken by land to the river Don, and floated down the stream to Azof. This trade was destroyed by the wars of Timour at the end of the fourteenth century.

The famous navigator, Sebastian Cabot, hoping to discover a north-east passage, fitted out a small expedition for that purpose in 1553, giving the command to Sir Hugh Willoughby, who perished in Russian Lapland with all his crew; but Richard Chanceller, more successful, entered the White Sea, and cast anchor at the spot where Archangel now stands. This happened during the reign of the Czar Ivan the Second, who gave the English mariners his protection, and encouraged them to open up a regular trade with Russia. When Chancellor returned to London, he founded a company, which took the title of "Merchant Adventurers for the Discovery of Lands Unknown," and out of this was formed the Russian Company. Ivan was a sagacious prince, and appreciated the advantages of foreign trade. Peter the Great, when in London, sold to the company the monopoly of selling tobacco throughout his dominions. From that period Russian commerce has extended itself in various directions.

Throughout this empire, industry, in all its forms, is subjected to a special organization, and every new enterprize is protected against competition. The associative spirit is strong among all classes; and workmen form themselves into clubs, to which they contribute money, making a common purse to carry out some particular undertaking, under the direction of a committee of management. Every trader must belong to a trading association, regularly incorporated; and these guilds, as they may be called, are ruled by wardens, who elect a chief. Their duties are various. They fix the terms of apprenticeship, and define the obligations of apprentices and journeymen.

Merchants are classed in three guilds. The two highest are empowered to embark both in wholesale and retail trade, and to establish factories; but, before they are admitted, they must prove themselves to be possessed of a certain amount of capital. This regulation affords some security to creditors, and shuts out a class of swindlers who have multiplied of late years in London and in some of our commercial towns. Many restrictions are imposed on the less opulent, who are enrolled in the inferior or third guild. Protection being the recognized principle, foreigners, though enjoying some privileges, are subjected to many restraints. On payment of a fee they may be admitted to membership in the trading corporations, but they can only purchase wholesale and exclusively of natives. From all retail transactions they are excluded, but they may purchase in open fairs. These rules are framed to secure as much as possible a control over the market to the burgesses, peasants, and small dealers of Russian origin. The law that requires inscription in a guild before a license to trade is granted, does not apply to the working-man, who is not prevented from earning his bread, and he may openly sell the products of his own hands; but this privilege ceases unless he commences and perfects the article, that is if it requires to be passed through other hands than his own. The law of inscription, however, does not admit masters to have apprentices or to hire journeymen unless they are regular members of the corporation. The serf who leaves his rural commune (not, of course possessing the rights of a free burgess), must inscribe himself in the town where he works for the whole time his passport grants him leave of absence; and it is a general rule, in order to keep the urban and agricultural populations distinct, that merchants and burgesses shall not have fixed habitations in the country. In villages peasants may trade as they please. Small traders cannot employ more than four men. No merchant inscribed in towns can put up booths either within or beyond the circuit in which fairs are held.

In Western Europe trade has ever been held to be an ignoble and degrading occupation. The patrician of Rome entertained the same prejudice. It has already been remarked that Russia never passed through an age of chivalry—an aristocratic institution which has left indelible impressions on England, and especially fostered an exclusive class who still give to idleness that homage which is really due to honest labour. But the Muscovite nobility, less sensitive or more wise, are proprietors of factories: they are not subject to the law of guilds; for on their own estates they are free to trade as they please. It is true they do not possess many; for, out of 7,000 factories, Haxthausen calculates that only 500 belong to the hereditary nobles; but we are not aware that any peer of the realm of England is a manufacturer of cotton or woollen fabrics; hence it is that the contrast is worthy of note. In the factories of the nobles, the serf works for his master; but in this occupation he receives wages; for the obrok is the tax he pays on his land. This indeed he may commute by working three days a week on the estate of his lord, which is the equivalent for the obrok paid in money. Formerly the lord could hire out his serf to a factory, but he can do so no longer, when the serfs are of adult age; still he may apprentice minors for seven years; and this exeption is allowed, as it enables the minor to learn a trade useful to him in after-life. Whether in the towns or in the rural districts, the foremen of factories are chiefly foreigners, British or Germans, and they receive from 10,000 to 12,000 roubles a year. Under their teaching native spinners and weavers are rapidly increasing in Russia.

The morality of trade is of primary importance to every country that aspires to commercial greatness, and Russia is notorious for dishonesty and bad faith. Ivan Golovine, a Russian of high family and great intelligence, thus describes the corruption that prevails among his countrymen: "Cheating is carried to such an excess in Russia, that one might be tempted to say it is in the air and in the blood. Russian commerce and manufactures are unquestionably the most dishonest in the world. China and England have equal cause to complain of it. The Chinese, who are too suspicious to receive without examination the rolls of Russian cloth, find pieces of wood inside; the English receive grease instead of tallow. In vain has the government repeatedly protested against these abuses, and the emperor has in vain issued decrees for their suppression. A Frenchman, who was appointed by the government to unmask all these frauds, was well nigh killed by the manufacturers; and the officers have evidently not been proof against the seductions which he resisted, for his denunciations have had no effect. The petty shopkeepers live only by plunder; you purchase an article in a shop, and take a different one home with you: you must be always on your guard. All servants are notorious thieves, especially the cooks and the coachmen. It may be pretty much the same everywhere, yet it is never carried to such an excess as in Russia. There the officers, even of the public administrations, seize eagerly with both hands: they do not wait till you give them something, but they beg and bargain with you, accept large presents, and do not disdain the most trifling."

This is the result of slavery, which extinguishes all self-respect and all love of moral approbation. Open and manly resistance to tyranny by a slave is punishable by death: he therefore seeks to compass his ends by deceit. In deceit he is trained from his youth, and, in whatever sphere or position he may be placed in after-life, deceit influences his conduct; and the only shame he feels is the shame of detection. It is well known that the Emperor Nicholas was aware of the universal depravity of his subjects, from the highest to the lowest; and that on a memorable occasion he said to Count Nesselrode, "The only person who is not a thief, and can hold up his head without dishonour, is *myself:* I am the only man in the empire who is not a plunderer." The demoralization of the higher classes is thus described by Golovine: "The peculations of persons in office is beyond all conception. All the functionaries, high and low, steal openly and with impunity, from the ammunition to the rations of the soldiers and the medicines of the hospitals. Will it be believed that they actually conceal the number of men who fall in every action till the end of the campaign, and thus continue to receive for the provisions and equipment of those who have disappeared from their ranks? In the Caucasus, where hostilities are incessant, this abuse had risen to an enormous excess; the ranks were thinned, yet the lists were full, as were also the pockets of the officers. .... The heads of the police have houses, and the governors have hotels. Persons in office make fortunes much faster in Russia than in other countries; and in some departments sooner than in others. One hand washes the other. The officers, high and low, share their gains; and woe to him who shall pretend to act with probity! the poor denounced sheep would surely be devoured by these rapacious wolves. By the aid of money the worst causes are gained in the tribunals, and money will purchase indemnity for every crime." This picture of his countrymen, drawn by Golovine, shows that in Russia the nobles have no sense of honour, and the people no sense of common honesty.

Peter the Great, to encourage infant industry, lent money to certain trades without interest, and this practice is not wholly discontinued: it is generally exercised in favour of those who invent or improve agricultural instruments. Government also supports credit institutions, or banks, which are of great service to manufacturers. The Commercial Bank, also under the control of Government, has a capital of

30,000,000 roubles, and lends money on the deposit of goods, and discounts the bills of natives and of domiciliated foreigners engaged in trade. This Bank grants to the members of the guilds a credit equal to the sum they deposit on being admitted into the corporation; but two securities are required. Money is only lent on the goods of natives, for foreigners have not that indulgence. The Bank of Commerce has its chief seat at St. Petersburg, with branches at Moscow, Archangel, Odessa, Kieff, Riga, and at Nijni-Novogorod during the fair.

Peter the Great and all his successors have been emulous of rivalling the civilization of Western Europe; and, impatient of the slow progress of a semi-barbarous people in the direction of art and science, they have unwisely attempted to precipitate the development of the material resources of their country. In the natural order of progress, agriculture precedes manufactures; and a long period elapses between the rule of the plough and the dominion of the loom. The Czars have desired to leap over this interval at a single bound, and have imported foreign machinery and foreign artisans; but they have missed their aim, for no law of nature is ever violated with impunity. For a long time to come, the true riches of Russia must be sought for in her land; and if her statesmen are prudent, they will derive strength from rural industry, the only sure foundation on which a manufacturing superstructure can be raised. Of its agricultural wealth we now proceed to give a general account, selecting the chief products in illustration of the subject.

Flax is largely cultivated over a considerable portion of Russia in Europe, and the export of this article is very considerable: England is supposed to purchase nine-tenths of the annual crop. It is excellent in quality, but still it is inferior to that grown in Flanders. Russian flax abounds in the valley of the Duna, and in the districts bordering the upper Volga and the upper Dneiper; it is also cultivated in the governments of Olonetz and Vologda, and even in Taurida and Georgia. The same districts which produce flax also yield hemp; but the latter article is inferior to that grown in Italy, particularly in the neighbourhood of Bologna. During the late war, fibrous substances were sought for in our colonies, and with very marked success in British India. Converted into cordage, the Indian material, tested against that of Russia, was four times as strong: as the vegetable grows wild, and is, in fact, a weed, the cost is only that of gathering and carriage. According to Tengoborski, the exports of flax and hemp from Russia, during the years 1847 to 1849, amounted to 6,991,581 pouds in each of the three years on an average. The poud is equal to 36 pounds English weight.

Beet-root is raised in several districts, and used in the sugar refineries in the governments of Toula, Kieff, Kharkoff, and Kousk. Hops are grown, but in small quantities, in the western districts of European Russia, in Livonia, and in the neighbourhood of Grodno, Bialystock, and Kousk: in the Eastern districts the culture is confined to the governments of Vologda and Saratoff. Beer has not become a national beverage, which accounts for the small share of industry devoted to the hop plant. Tobacco is pretty widely cultivated. Timber forms a large constituent in the aggregate of Russian wealth. According to the measurement of M. de Brinken, the forests of Russia in Europe cover an area of 20,000 square miles. The immense forests bordering the Baltic and White Seas, and which are connected by the forest of Volkonsky, furnish Russia with timber for her Baltic fleet; whilst in the south, the mountainous portion of the Crimea and of the Caucasus supplied the fleet of the Euxine, now annihilated, and, if treaties be observed, never to be restored. These forests also furnish fire-wood; but near the rivers Desna, Oka, and Kama, there is no timber, and peat is used. In Great Russia all the houses of the peasantry are constructed of wood, and nearly all those built in the towns, which of course causes a large consumption of timber.

Tallow is an important article in Russian commerce, largely furnished from the cattle of the Steppes. On an average of three years, 1846-7-8, Tengoborski values this product at 3,810,000 pouds annually; and M. Arsenieff calculates that there are five heads of cattle for every twelve inhabitants. The number of sheep is put down at 40,000,000; and the export of wool, Poland not included, is estimated at 842,000 pouds, while the home consumption amounts to 480,000 pouds. It is said that there are proprietors in the Steppes who own flocks of 60,000 to 80,000 sheep. Russian wool, particularly that of the Steppes, is weak and deficient in elasticity, and is only fit for inferior fabrics; but it is believed by some writers that this is caused by drying the fleeces by the sun and wind. Skins and hides are abundant, but are badly dressed, and are inferior to those of Buenos Ayres. Furs of all descriptions are found in Russia; and, including all kinds, those sold at the fair of Nijni-Novogorod, in 1842, realized the large sum of 2,000,000 silver roubles. Skins, hides, and furs are among the earliest products of Russian industry; and for a long period, Siberia paid its tribute to the Czars in the skins of animals. The most valued skin is that of the sable. We learn from Storch that when Kamtschatka was first conquered, a single hunter could capture sixty, eighty, or a hundred sables in a winter, and return with a profit of 300 silver roubles; but since 1740, when the first hunting expedition was undertaken, these animals have greatly diminished. Some are yellow: the white are very scarce. The Chinese, Persians, and Turks highly prize these skins, and at Constantinople they fetch enormous prices. The skins of foxes and squirrels are much esteemed; those which are black are the dearest, and come from Eastern Siberia, Irkousk, and Nerchinsk. Squirrels of a silvery colour, and those that are striped, fetch large sums. Except in Siberia, the beaver has almost disappeared. Another leading article is hogs' bristles, which, according to the tables of 1842, have been exported to the value of 1,302,235 silver roubles.

If Russia is rich in the vegetable and animal kingdom, she is no less opulent in the mineral; and official documents prove that in 1842 the metals of native origin, sold at the fair of Nijni, realized the large sum of 7,700,000 silver roubles. The northern promontories of the Altai mountains, and portions of other hills which traverse southern Siberia, as well as the beds of rivers traversing these regions, are rich in auriferous metal, though poor compared with California and Australia. The mountainous chain of the Oural, according to Baron Alexander Humboldt, is found to produce gold for 17° of longitude. In the years 1821 and 1822 the Oural only furnished 27 to 28 pouds of gold; but the quantity since those dates has largely increased. In 1834 the gold washings in the Siberian rivers became very productive. In 1837 Humboldt puts the yield for the Altai and Oural united at 469 pouds, and Tengoborski, estimating the total from 1819, when the presence of the metal first invited experiment, down to 1848, puts the aggregate at 223,900,000 silver roubles. "If," says Humboldt, "we consider the enormous extent of the Siberian continent, and recollect the rapid increase of gold from the Oural in the years 1822, 1823, and 1824, it will appear extremely probable that the reflux from east to west (from Asia to Europe) has by no means reached its maximum. The produce of eastern Siberia will probably increase more rapidly than that of the washing of the Oural, where the richest beds were first, and, in the beginning, unfortunately only superficially worked. In the hydrostatic separation on the washing floors, a considerable quantity of precious metals, which cling to grains of oxide of iron and other light substances, is undoubtedly lost."

Platinum, a very scarce metal, is plentiful in Russia, and the country is rich in iron and copper. The best mines are in the government of Koursk, but those in the government of Perm are very valuable. Tengoborski averages the annual weight of cast iron at 11,856,294 pouds, and of wrought iron at 8,374,173 pouds; but this does not include the kingdom of Poland, which yields of both qualities 3,320,410 pouds. The average of copper is 870,649 pouds. Lead is found in the government of Perm, and mercury in the mines of Nertschink. Both Poland and Finland yield zinc. Georgia contributes pewter. Northern Russia largely imports salt, though it is abundant in the salt lakes of the south, in the Crimea, in the Nogais Steppes, in Bessarabia, and in the government of Irkousk in Siberia. Saltpetre is obtained in Bessarabia, asphalte and sulphur in the government of Orenburg, and naphtha in the neighbourhood of Bakou. Central Russia is deprived of stone, but the governments of Perm and Olonetz possess granite and marble. Perm yields jasper and loadstone, and, with Irkousk, amethysts, agates, and diamonds. Considering that the provinces of Southern Russia, and even large portions of Central Russia, are without timber, peat is a most important article for fuel, and it is found at Tula, Kalouga, and Kharkoff, and has been traced from this last place to Taganrog, and even to the Dneiper. Finally, the general aggregate of the produce of raw material through the Russian empire is put down by Tengoborski at 2,093,500,000 silver roubles, but he considers it below the actual value. Such, then, is a summary of the industrial resources of the Russian colossus, whose back leans against the extremities of the globe, having one foot in Europe and the other in Asia, while its gigantic arms stretch over nearly 2,000 leagues of territory, from north to south, and from east to west.

The revenue derived from the Russian custom-houses has not been brought down to a very recent period, or at least has not been officially published; but it stood thus in 1848 and 1849:—

	Silver roubles.	English sterling.
1848	31,220,149	£4,683,022
1849	31,760,318	4,764,047

VALUE OF EXPORTS.

	Silver roubles.	English sterling.
1848	179,115,125	£26,867,269
1849	192,335,242	28,850,286
1850	192,366,190	28,854,988

The public debt of Russia stood thus at the dates annexed. January 1st—

	Silver roubles.	English sterling.
1849	326,675,853	£49,001,378
1850	336,219,492	50,432,929
1851	386,309,693	57,946,454
1852	400,297,799	60,100,170

If national greatness were measured in extent of territory, Russia would be the most powerful kingdom in Europe; but her very vastness is the cause of her weakness. The enormous distances between her cities render the interchange of commodities always expensive, and frequently prevent traffic. Her system of canalisation is excellent; but until the country is intersected with iron rails and telegraphs, her home trade must remain sluggish and contracted. Her population of sixty millions is really scanty in proportion to her area, and so long as the vast majority of the inhabitants are serfs they will never display that mental energy which free men alone can exhibit. Russia can never become a great commercial nation till justice is certain to be obtained in her courts of law; and instead of prematurely forcing manufactures, she should confine her industry, for at least another hundred years, to agriculture.

But little more than a century has passed since Russia, emerging from her gloomy deserts, interfered in the affairs of Europe. It was in 1735 that an auxiliary Russian corps, despatched to operate a diversion in favour of Austria during the war which ensued on the disputed succession to the throne of Poland, arrived on the banks of the Rhine, and determined the signature of the preliminaries of the treaty of peace signed at Vienna in the following year. From that epoch Russia has figured as one of the leading powers of Europe. Paul the First maintained a Moscovite army in Holland, and a second in Italy; and the latter, commanded by Suwarrow, defeated the French republicans at Novi and at the Trebbia; but it was the rash invasion of Russia by Napoleon, and his inglorious retreat from Moscow, that revealed to Russia her military strength. From that fatal day the Czars have been haughty, aggressive, dictatorial, and eminently intriguing in every capital of Europe. They have endeavoured to absorb Turkey and Persia, as the outer gates of British India; and having acquired maritime supremacy on the Caspian Sea, have extended their desires to Khiva and Bokhara, the Jaxartes, and the Oxus. This ambition for extended empire has recently received a signal defeat, and it is to be hoped that it may prove a salutary warning. Before Russia can establish a claim to sincerity in her professed desire to secure religious liberty for her co-religionists living under the rule of the Sultan, she must grant political freedom to her own serfs; and when she has made men out of slaves, she will be able to develope her industrial resources; then she will perceive that real strength must be fostered by the peaceful operations of agriculture, and not by the reckless spoliations of war.

THE DETERIORATION OF SOIL IN THE ATLANTIC STATES OF THE AMERICAN UNION.

SIR,—In my letter of the 4th instant, on the wheat crop of 1855 in the United States, I referred to the decrease of production in the older states as sufficient to counterbalance the increase in the extent of cultivated land in those states. That I did not assume this to be the fact without sufficient authority I shall now proceed to prove, and also that until a better system of husbandry is pursued, and more labour bestowed upon the land, the process of deterioration must go on, until the land will produce little more than the seed bestowed upon it.

The following quotation on this subject is from "The Year Book of Agriculture for 1855," a work first published in New York, and republished by Trübner & Co., Paternoster-row, and it fully justifies me in the conclusion I have come to, that the new Western States will have to make good the deficiency which an increasing population and decreasing production will continue to create in the Atlantic States:—

"ALARMING DETERIORATION OF THE SOIL.—The constant deterioration of the soils in New England, and throughout most of the agricultural districts of the United States, is a fact of portentous and alarming significance, though it has not yet arrested very extensively the notice of the public. Probably there is no one fact in our agricultural economy of more pregnant interest than this in its bearings upon our future prosperity. Some statistics, illustrating this downward tendency in our ability to produce the fruits of the earth will now be given; and they will, I think, conclusively prove that a more prudent, skilful, and scientific mode of cultivating the soil is absolutely indispensable.

"Between 1840 and 1850, three hundred thousand acres of land were added to those previously under improvement in Massachusetts; ninety thousand acres were added to our mowing lands, and yet there was a relative depreciation of the hay crop during that decade of years of 12 per cent. Our tillage lands during the same term were increased forty thousand acres, and yet there was an absolute depreciation in our grain crop of six thousand bushels. The pasturage lands were increased more than one hundred thousand acres, with scarcely any increase of neat cattle, and a reduction of one hundred and sixty thousand sheep and seventeen thousand swine.

"The same law of deterioration is also observable in the richer regions of the South and West, showing that with our present unskilful modes of farming, we are taking much more from the productive ability of our soils than we are returning to them; and that our agricultural prosperity is really and constantly on the wane. This downward tendency is partially hidden from public observation by the vast products which are raised upon the new and almost limitless regions which are every year put under cultivation in the West; but the fact itself is still indubitable.

"In the State of New York, between the years 1845 and 1850, 671,692 acres were added to those previously under improvement; and of course there ought at least to have been a corresponding increase in the agricultural products of the State. But what is the fact?

The number of horses decreased is	58,141
Milch cows decreased	63,066
Sheep, the decrease was	2,990,622
Other cattle, the decrease was	127,525
Swine, the decrease was	566,002
Of potatoes the decrease was (bush.)	7,255,066
Of peas and beans there was a decrease of bush.	1,132,054
Flax, the decrease was (lbs.)	1,956,485
Wool, the decrease was (lbs.)	3,793,527
Wheat, the decrease was (bush.)	270,724
Buck wheat, the decrease was (bush.)	450,724

"There was an increase in the amount of corn (maize), rye, oats, barley, hay, butter, and cheese raised in that State, but no greater than would have been expected from the increase of the population, which was 494,323 during those five years.

"In Tennessee the number of cattle raised was—

In 1840	822,861 head.
1850	750,565 „
Showing a decrease of	72,296 head.

"In Kentucky, more than nine-tenths of the entire area of the State is covered with farms. The number of neat cattle raised was—

In 1840	789,093 head.
1850	753,312 „
Decrease	35,781 head.

"Horses and mules raised in Kentucky—

In 1840	395,953
1850	381,291
Decrease	14,662

"It is estimated by intelligent farmers in Indiana that their river-bottoms (valleys), which used to produce an average crop of sixty bushels of corn (maize) per acre, now produce only forty. In Wisconsin, which is younger still, it is estimated that only one-half the number of bushels of wheat are now raised on the acre which were raised twelve years ago.

"These estimates are based on the returns made to the Patent Office, and are as reliable as any now before the public. What, then, is the conclusion of the whole matter? It is this:—that the soils of New England, after all the admonitions we have received on the subject, are annually growing poorer, and that *even the virgin lands of the great West* are rapidly becoming exhausted of their fertility..... Within fifty years our population will undoubtedly reach the enormous number of one hundred millions; but the grave question is, How are these myriads to be fed and clothed and educated, if our present impoverishing agricultural processes are to be continued?.... This is a problem which many thoughtful and far-seeing men are beginning to ponder, and which requires but little wisdom to solve."

Such are the condition and prospects of agriculture in the United States, and it will account for the fact of so small (comparatively) an amount of cereal produce exported from thence, in proportion to the quantity of land annually brought into cultivation. It was computed that in five years up to 1853 more than twelve million acres had been added to the cultivated land in all the States; and a writer in your paper threatened to deluge Europe annually with wheat from that period. These were *great words*, and nothing more.

I shall recur to the subject again, for I consider it of vital importance to ourselves as well as to the Americans.

Yours, &c.,

London, Aug. 6. AN OLD NORFOLK FARMER.

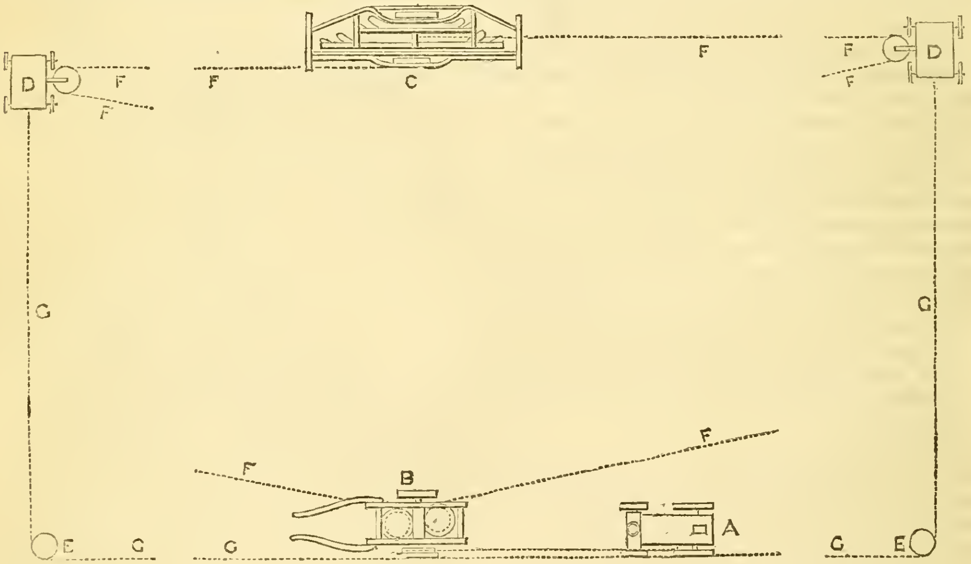
STEAM CULTURE,

AS EXEMPLIFIED AT THE CHELMSFORD MEETING.

FOWLER'S STEAM PLOUGH.

The ploughing in this example met with general approbation, as a fair beginning. Several queries were raised as to expense, mechanism, and validity of the patent under which a license could be granted to use; but the quality of the work performed, although inferior, maintained a respectable appearance in comparison with that done by horses, leaving an indelible impression upon the mind that horses at no distant day would be superseded by steam in ploughing. And what greatly added to its popularity was the successful and workmanlike manner in which the experiments were conducted throughout the different days of the show, without a single break-down or even mishap; thus proving to the vast concourse of spectators that, even in its present state, it was calculated to form an invaluable auxiliary in seasons when horse-work was behind, and that in ordinary seasons portable engines could be as profitably employed in the field as in the stack-yard.

The principle of mechanism is that of a stationary windlass driven by a common portable engine, and actuating a set of one-way ploughs by means of a wire rope; and the following plan, as exemplified at Chelmsford, will convey to those of our readers who have not seen the apparatus a better conception of its combination than perhaps could be done by any amount of letter-press. It will be seen to consist of seven parts, viz., the engine A, the windlass B, the plough C, the two anchors D D, one at each end of the field, each having a pulley; the two snatch blocks E E are also at each end of the field; the two ropes F F for hauling the plough, and the two ropes G G for shifting the anchors.



A Engine.
B Windlass.
C Plough.
D Anchors.
E Snatch blocks.
F Rope for drawing plough.
G Rope for moving anchors.

The engine is a common portable one, having an 8-inch cylinder, and was worked with a pressure of about 100lbs. of steam to the square inch, being consequently equivalent to about 26-horse power. It is stationed at the side of the field or lands being ploughed, near the windlass, which it drives in the usual manner thrashing and sawing machines are driven; so that tilling apparatus and tackle may be made to suit any engine at present only employed for thrashing, thus enabling its owner to bring it to bear upon any emergency, or, perhaps, what is better, to keep it and his engineer in continuous employment together.

The windlass consists of two vertical drums, the one for winding up the hauling rope (F), and the other for paying out the rope (F) behind the plough, these operations being reversed with the alternate motion of the plough along the land. In this respect the principle of mechanism is that specified in Osborne's patent; the only material difference being that Fowler's windlass is detached from the engine, whereas Osborne's is the reverse, being fixed to it. The former is borne on four small wheels, and is shifted, like the engine, from place to place by horses as the lands are ploughed.

Of ploughs, two kinds were experimented with; the one a one-way steam-balance trench plough under Cotgreave's patent, and the other a one-way steam balance plough invented by Mr. Fowler and Mr. Grey, of Barking-side. Both ploughs were manufactured by Messrs. Ransomes and Sims, of Ipswich. Each consists of two large (somewhat clumsy) wooden beams, about twenty feet in length, balancing over the axle of two wheels, and carrying four ploughs, making a total of 8 ploughs—four on one end of the beams for ploughing upland, and four for ploughing downland on the other end of the beams, the four not in operation being carried above ground. On reaching the headland, the latter are lowered and the former raised by balancing the beams over the axle, and removing a wheel to what are now the front beams from those which were so when the implement was moving in an opposite direction. The front beams also serve as a steerage for the man who guides the ploughs. In the case of the trench ploughs, one plough follows another, turning up the subsoil to the surface, so that only two furrows in breadth are ploughed by the implement at once; whereas in the other plough four furrows, about six inches deep, are turned at one time.

Various ingenious contrivances are adopted for regulating the depth of the furrow, and keeping the beams on a proper level. One of the wheels, for example, supporting the beams, runs in the furrow, while the other is on the unploughed land; consequently, they shift places alternately, and therefore the beams require a vertical movement, so as to keep them on a level, or parallel to the surface of the land. For this purpose the screw is adapted according to Mr. Smith's patent, and for which Mr. Fowler has, we believe, taken out a licence, or is about to do so.

The anchors are according to Worby's patent, and consist each of a small truck, with four loose disc-wheels, which cut into the ground, there being on the axle rollers to prevent them sinking too deep. The trucks are weighted by filling them with earth, so as to force the discs into the ground; and when greater stability is required than this affords, a common anchor may be thrown from the opposite side of the truck into the ditch of the headland, or furrow where no ditch exists; but in general the discs will be found to present a sufficient anchorage to the implement.

The snatch-blocks, and method of anchoring them, are similar to those of his draining-plough and mode of anchoring them, so that description here is unnecessary, as our readers must already be familiar with such.

Various plans are proposed for yoking the rope to the implement, according to the work to be done. For ploughing stubble or open lands, as at Chelmsford, the windlass (B) is fixed at one side of the field, equidistant from each end, while the plough (C) is placed at the opposite side, with an anchor and snatch-block (D) at each end, over which the rope (F) passes directly from the windlass; so that in this case the rope forms a triangle at the commencement of the work, but finishes in that of a parallelogram, the angle which the ropes make at the windlass becoming more and more obtuse as the plough and windlass approach each other; consequently, the friction on the snatch-blocks and on the ground will be different at different parts of the field, and the force required to overcome it accordingly. In ploughing, again, the intermediate spaces, on the Lois Weedon system, the rope (F) would have to pass over a second pulley at the corner (E), at each end of the field, thus remaining parallel to the rope (G), for hauling the anchors. When working, as at Chelmsford, small "horses" or friction-rollers are used between the anchors and the windlass, for supporting the rope and carrying it transverse ways over the ground, as the anchors (D D) near the snatch-blocks (E E). On the comparatively level land of Essex this contrivance worked well; but in the case of abrupt eminences or like obstructions, more difficulty, perhaps, would be found in getting the rope to traverse the ground cross-ways.

The other rope for hauling the anchors is also worked by the windlass during the time the plough is being shifted another breadth across the field, and placed in working order for the reverse direction in which it had the previous land-length been going. When the plough reaches the headland, a signal is given to the engineers at the engine and windlass, who at the same time signal the man at the opposite anchor. Both anchors are then drawn forward the breadth of the land ploughed, and fixed, when the motion of the drums of the windlass is reversed, thus drawing the plough towards the opposite headland, when a similar shift of the anchors is again made.

Such is a brief review of the different parts of this steam-plough. As a whole, it presents a very close resemblance to that of Mr. Hensman, manufactured by Messrs. Barrett, Exall, and Andrews, of Reading, and patronized by the late Mr. Pusey, and which was allowed to fall to the ground in consequence, we believe, of its complication of parts and expense of working. How far Mr. Fowler has simplified his plough, and reduced expense, we are not at present prepared to say, having been called from home before we had had time to visit Reading and make the necessary examination. But, out of respect to the late President of the Royal Agricultural Society, we shall endeavour, on our return home, to present our readers with a detailed account of the Berkshire steam-plough. Meantime, let us notice some of the leading objections raised against the general mechanism of Mr. Fowler's, and the results obtained, not for the purpose of condemnation, but to show how far such objections can be removed.

1. The first objection raised is the expense of horses required to take the engine, windlass, plough, and tackle to and from the field. But this can easily be obviated by the adoption of the endless railway, so as to make the engine a traction engine, capable of hauling the windlass, plough, tackle, coal, and water to the field.

2. The next objection is, the small amount of disposable traction-force for hauling ploughs, compared to the force of steam applied, thus proving the friction of the wire rope on the ground and over the pulleys, &c., &c., to be great. At Chelmsford, for example, the draught of the ploughs in the heavy-land field was esti-

mated at equivalent to that of 12 horses, while the force of steam was equivalent to the draught of 26 horses—some said 30. Probably we shall not be very far from the truth if we say that the motor-force was double the disposable traction-force for tillage. Now, before such questions can be settled satisfactorily—and therefore before they ought to be raised—a far more varied and extensive course of experiments must be made, accompanied with the dynamometer, than was made in Essex; for there the 12 horses yoked in the plough may have applied the draught of 16 horses according to the usual calculation, as the dynamometer would have proved, had there been one to settle this point.

3. Large fields cannot be cultivated without subdivision—a plan which incurs a serious loss, from the number of headlands it entails upon the practice. This is another of those questions which must be settled by experiment in the field. At the same time there cannot be a doubt that there is a very narrow limit to the length of land, beyond which rope traction is impracticable; for, taking the weight of the wire-rope at only 2lb. per yard (and 3lb. is the weight of one yard of a rope ⅞ in. diameter), then a field 300 yards long would require at the commencement 1,000 yards of stretched rope on the ground—equal to 2,000lbs. Now as such a weight is always suspended over a series of points, the catenary forces involved readily account for the large quantity of motor force consumed in overcoming them, and the small amount of disposable traction force remaining for hauling ploughs. The sooner, therefore, this limit is settled by experiment as to the length of land the better, as it will enable purchasers to make their calculations, and lay out their fields accordingly. We do not anticipate anything more calculated to oppose the satisfactory introduction of this mode of traction, than the non-settlement of the question at issue, because disappointment would be the certain result in innumerable cases, few farmers being familiar with the catenary action of a rope, and therefore we would again press upon the attention of our readers the propriety of having the limit in every case settled by experiment, so as to avoid disappointment.

4. The ploughs neither enter the ground at the headland nor come out of it in a proper manner, owing to the action of the wheel which runs in the furrow, and the one plough being in advance of the other. In raising this objection it is but fair to remind our readers that the inventors and manufacturers have not yet had the necessary time to effect those improvements in detail which such objections contemplate, but that they are about being effected The objection, therefore, although good in the meantime, will fall to the ground before another year's competition takes place. It must take several years before steam-ploughs can be brought to a comparative state of perfection, so as to enter successfully into competition with horse-ploughs; but that the former will ultimately supersede the latter is plain to every one acquainted with the steady action of steam and the irregular action of horses, and the implement under consideration could not have fallen into better hands for improving it than the Messrs. Ransomes and Sims, from the prominent place they occupy in the manufacture of ploughs.

AGRICULTURAL LAND DRAINAGE.

By J. Towers, M.H.S.

This operation, with its indispensable concomitants, is so vitally important to agriculture and its full development, that I have judged it necessary to enter upon a somewhat minute research into its requirements. By the term "adequate drainage," we by no means imply the simple laying down of pipes or tiles at certain given depths and distances; a far greater latitude must be assumed, if permanent fertility and a great increase of productiveness be contemplated.

"The subject which first demands attention is that *thorough-draining*, which is now regarded by the farming world as the basis of all land improvement, and the neglect of which renders every other attempt at its amendment *abortive*." I assume, therefore, that no thorough-drainer can be content until his land is made quite dry, at whatever depth and distance the drains are required to be laid.

Experience has proved that the best effects have resulted from a system of drains dug 30 inches below the bottom of open furrows between rounded ridges (which depth is equal to 33 inches below the level surface of the ground), and placed 18 to 30 feet apart, the main drains being laid 4 feet deep. If measures so energetic be required to fully develope the prolificity of a soil, what must be its condition, and what its produce, when we perceive water at the surface after every copious shower of rain, the grass land abounding with rushes, and the arable land (after being ploughed, harrowed, and left for a time undisturbed) showing distinct brown patches on the surface, of a much darker tint? In such cases, the presence of stagnant water beneath is plainly indicated. During the transient frosts of last winter, I repeatedly saw a thin coating of ice lying in every furrow upon unabsorbed water. The land in such instances was of that more binding quality which is prevalent in the vicinity of Norwood, north and east of the railway; the furrows there are shallow, and the slightly rounded ridges not wider than is required to receive 10 or 12 rows of wheat, but yet anything approaching to a good drainage would have removed water from so shallow a surface. Again, what must be thought of a broad and extensive piece of land like Mitcham Common, the staple of which is light, and of a quality so excellent as to be called, *par excellence*, *Mitcham loam*? This vast expanse produces little else than furze bushes, and a miserable grass herbage barely sufficient to yield a nibble for a few sheep. The whole breadth is a vast swamp, abounding, it is true, with plenty of the plant called *sphagnum*, or bog moss, so valuable to orchis growers. But the population of Britain requires the cereal crop, that of wheat particularly, as the grand staple; and every wise landlord and trustworthy tenant will devote his strenuous energies to bring it to the utmost perfection. In order to furnish some correct ideas of the means which may be resorted to, we must first insist on the necessity of a deep laboration of the soil and subsoils, comprising the thorough intermixture of both. It is admitted that there *are* subsoils which do not require such a blending, or even any process of draining; and as examples, I cite the chalk rocks of Thanet and the porous deep gravels that are found in many parts of Britain. But as a general rule, experience warrants the assertion that a process equal in depth to that of garden trenching should be adopted, wherein the surfaces might be reversed in the first instance, the intermixing of the two soils constituting the second process. Thus I acted in Berkshire, while converting part of a field into orchard ground. I was told that, by bringing up the crude subsoil, I had rendered the plot barren for years; the very reverse proved to be the real fact. Little or no manure was employed, yet vegetables of most sorts throve well, and all the dwarf apple-trees took to the land. Talpa's plan, by steam cultivators, is founded in truth, while it discards the plough; but the *deep-land culture* adopted by the Marquis of Tweeddale bears the most forcibly upon it, as it is the most congenial with the habits and practice of English agriculture, and therefore I feel the more disposed to recommend it as the most perfect system of farming that has ever been adopted and laid open to the practical and inquiring reader. In proof of its general principles, a few facts are thus adduced: "The stirring of the ground to the depth of 19 inches seems an efficient assistance to thorough draining, in passing water to the drains; and that depth, too, renders the materials of a drain safe from the contact of the implements used in cultivation, even when drains do not exceed 30 inches in depth below the hollow of the open furrows, or 33 inches below the crown of the old gathered-up ridges. The action of the Tweeddale plough and subsoil trench-plough is applicable to all classes of soils and subsoils; in clay, sandy, and gravelly subsoils, the subsoil trench-ploughing may be executed in an efficient manner."

But I must not further trespass; and therefore am content to refer to the little book entitled "Yester Deep Land Culture." It will, as it ought to, speak for itself, and establish the fact it advocates upon a sure and immoveable foundation.

THE CHELMSFORD MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

REPORT ON THE IMPLEMENTS.

In commencing our detailed description of the implements and machinery, we cannot refrain from congratulating the Stewards, the Local Committee, the Honorary Director (Mr. Gibbs), the Judges, and others connected with the management of the Show, upon the thorough and satisfactory nature of the trials, and especially for the assembling together of the finest horses in the country, most of them very splendid animals, to make the various experiments with such a multitude of field implements. Mr. Gopsill and his coadjutor were indefatigable in marshalling the horses; and Mr. D. Christy, on whose farm the heavy-land trials took place, added much to the zest of the occasion, by his hospitality and constant readiness to oblige in every way.

As the tillage implements, for which prizes have been awarded, will not come under notice again for three years, we shall go most into detail with them, reserving extended notices of other machinery for reports in the next and following year, thus furnishing our readers with a reference-criticism more particularly confined to the trials of each year.

In addition to the many prizes placed at the discretionary disposal of the Judges, they were instructed to award the following distinctions of merit, namely: 1st, Very Highly Commended; 2nd, Highly Commended; 3rd, Commended; 4th, Favourable Mention: and their reasons for assigning these different degrees to so many implements (and the honours, bear in mind, are to last three years), will have to appear in the Society's Journal with the Stewards' Report, forming a very valuable standard and guide for the information of farmers and implement makers.

	Number at Lincoln, 1854.	Number at Carlisle, 1855.	Number at Chelmsford, 1856.
Exhibitors	130	118	147
Ploughs	27	19	23
Subsoilers	17	8	10
Cultivators, &c.... ..	25	23	28
Clod-crushers & Rollers	24	17	25
Harrows............	16	9	17
Draining-tools	4	1	8
Drills	30	14	18
Manure-distributors ..	9	3	5
Horse-hoes..........	21	10	24
Reaping-machines	12	9	5
Haymaking-machines..	4	6	10
Horse-rakes	14	8	17
Thrashing-machines ..	26	21	33
Corndressing-machines	24	18	31
Chaff-cutter	33	22	46
Linseed-crushers	20	14	25
Turnip-cutters, &c....	18	20	32
Oilcake-breakers......	20	12	23
Churns	12	7	10
Carts & Waggons....	28	14	33
Brick & Tile-machines	11	7	9
Steam-engines	24	18	31
Miscellaneous........	442	336	602
Total	861	616	1035

It is to be understood that this table represents the number of different *varieties*, or of different makers of each implement, and not the actual number of *articles* exhibited under each head; for the real number of ploughs in the Chelmsford showyard was not 23, but 49; and of steam-engines not 31, but no less than 84; while the number of entries of "New Implements" was, at Lincoln, 101; at Carlisle, 107; and at Chelmsford, 102.

A glance down the columns of the table suffices to show how the vast increase of implements has been obtained; for while, as a rule, every class presents greater numbers, we see that clod-crushers, harrows, horse-hoes, horse-rakes, thrashing-machines, steam-engines, corndressing-machines, chaff-cutters, crushers, turnip-slicers and pulpers, and carts and waggons, have done most to swell the Catalogue. And it is to be noted that reaping-machines alone have decreased in number, indicating not that they are falling into disrepute, but that many useless inventions are giving way to some few which are really promising and good.

STEAM CULTIVATORS, &c.

No less than six names appear in the Catalogue under this heading; and if we include Boydell's engine, and Howard's arrangement of ploughs for steam-power, we have eight different exhibitors of steam-cultivating machinery.

First, of those inventions which did not appear either in the show-yard or trial-field.

Mr. Williams, of Baydon, Wilts, has patented a "hauling machine," which consists of two driving-drums or windlasses, fixed in a frame on four wheels, and attached to an ordinary farm-engine. The machinery is constructed to reduce the speed of the engine to a plough pace; and by means of wire-ropes, and a back-hauling platform at the opposite end of the field, cultivators or ploughs may be dragged up and down. However, from seeing the inventors' specification, we should say that owing to the inconvenience and expense of working, the scheme is very far from practicable at present.

Mr. David Dunne Kyle, of 120, Albany-street, Regent's-park, London, entered a steam-cultivator, which, had it appeared, would have represented a very favourite notion of the machinist, namely, a revolving steam-driven digger attached behind a locomotive-engine. The excavating part consists of a main shaft or axle, revolving in bearings supported by the carriage. On the middle of this shaft a spur-wheel is fixed, and at each end circular pieces; through these four or more hollow rods run parallel to the axle, thus forming a cylindrical frame—the spur-wheel gearing with wheel-work actuated by the steam-engine. Levers are hung on these rods, and in a spiral form, so as not to be all in work at once. To their outer ends cutters for ploughing up the ground, small wheels with radiating spikes, and buckets with teeth or scoops are attached; and the machine, being made to revolve, excavates the soil, lifts it in the buckets, and deposits it at the rear. Springs are provided so that the levers yield before stones or other obstacles, without shock or breakage. In difficult ground crowbars can be arranged to fall and be raised alternately by the machine. A sort of "endless railway" is adopted for facilitating the propulsion of the engine over the land. Of the merits of this contrivance we cannot speak; but leave our readers to judge from the above scanty description.

Robert Roger, of Stockton-on-Tees, Durham, the manufacturer of Fisken's steam-ploughing machine, also entered, but did not appear. From the promising performances last year at Carlisle, it is much to be regretted that this invention did not appear in competition, as we understand that it has been recently improved. Instead of a single grooved traction rigger, two drums are now used, which, fixed upon the travelling windlass, alternately pay out and wind up the stationary wire ropes. The ploughs can be lifted individually out of work, so that each implement may plough close up to the headland. There is scarcely any wear of the wire-rope; and the rapidly-moving light hemp-cord which transmits the power from the engine to the windlass, is so prepared as to be impervious to wet, and costs only a halfpenny per yard. The power of the engine is applied to raise and lower the implements in and out of work, and yet the machine is not rendered unduly heavy or unwieldy. The anchors also are self-adjusting, being shifted by the power of the engine. For the small amount of labour required, and the duty performed in some recent trials, we are of opinion that Fisken's method will yet enter into strong competition with the schemes involving direct haulage by wire-rope, and will certainly surpass all for actuating revolving cultivators.

In noticing the steam-culture machinery really exhibited, we shall take first Boydell's locomotive engine. This consists of a portable engine, mounted upon carriage-wheels fitted with the well-known and most ingenious "endless railway." Two 6½ inch cylinders work with steam generally at 60lbs. pressure; and reversing gear is provided, in order to drive the fly-wheel and machinery either way. The fly-wheel is made so as to drive a band and actuate a thrashing-machine, saw-mill, or any machinery whatever; and for travelling, a couple of pinions (for two speeds) are hung on the crank-shaft, gearing into a spur-wheel fixed to one of the large carriage-wheels of the engine. When geared as a locomotive the engine can travel at the pace of either 2½ or 5 miles per hour; the latter being employed for common roads, the former for dragging weights or implements in the field. The boiler is a common 8-horse power at 45lbs. pressure, and can be worked up to 10 or 12. The weight of the entire machine is 9 tons, or more with a full supply of water in the tank. Price £550. From what we saw of its performances, it seems fully able to propel itself and draw its tender of coals and water from one field, or one estate, to another without the least help from horse-flesh; it can pull barn machinery from one point to another, cart manure upon the land, harvest crops, convey produce to market, and, in spite of inclines and declivities, drag perhaps 8 or 10 ploughs in light land, 6 inches deep, at the pace of 2 miles per hour. But few hands are required to work the engine; and when a suitable plough or tilling machine is constructed, which one or two men can direct and manage (and it is unfortunate that none such was produced at Chelmsford), it is very probable that Boydell's engine may compete closely with the more practical-looking wire-rope apparatus. The one item which is most likely to defeat him is, "wear and tear:" what sum this may amount to in a very few years we are afraid to contemplate; and the proof can be had only after several years have expired.

Coleman's patent plough for steam-power is intended to be drawn by Boydell's or some other locomotive engine. It consists of an iron frame about 18 feet in length, in which 9 ploughs are hung upon levers in a manner suggested by this maker's well-known scarifier, so as to preserve their parallelism at any depth to which they may be individually and separately adjusted by set-screws and connecting-rods; and all can be raised or lowered together by wheels for the purpose. The ploughs proceed in a V form, throwing half the furrows each way. In the course of the experiment there appeared to be considerable difficulty in adapting so many ploughs together to the shape of the lands or stetches, and only when several of the implements were removed was anything like tolerable work accomplished. The price of the machine is £85; but every practical man we met agreed with us that, while simple and easy in its construction compared with some contrivances for a similar purpose, it is yet too imperfect in its action and too limited in its application to come into use for traction either by a locomotive engine or a wire-rope.

Mr. Williams, of Baydon, exhibited specimens of an implement described as a three-furrow plough, scarifier, cultivator, and grubber combined, consisting of a skeleton frame, carrying four beams as a scarifier; which, by a simple alteration, may be made into a cultivator, or into a three-furrow plough: the mechanism for raising and lowering being very novel, and patented by this gentleman. We presume that Mr. Williams's steam hauling-machine is intended to work these implements; but, in the absence of any knowledge of actual trial, cannot pronounce upon their merits.

It is a very common opinion that ploughs cannot be made to work well if fixed rigidly together in a frame, but that they must have "play," and "swim" independently of one another. Hence several inventors have from time to time proposed to yoke common ploughs, with a man to hold each, behind a locomotive engine, or behind a carriage frame drawn by a wire rope. But as one plough must necessarily be some distance behind another, the last of a series of four or more ploughs cannot come within several feet of the headland. To obviate this disadvantage, Messrs. J. Howard, of Bedford, and Mr. G. W. Baker, of Woburn, have patented a new arrangement and mechanism, consisting of four turnwrest ploughs (of Mr. Howard's peculiar construction, having one share-and-mouldboard out of work, and carried above the beam, whilst the other is ploughing) attached by short wire ropes to a travelling frame, which is drawn by a wire rope from a stationary engine. A number of small drums are hung loosely upon a shaft on the frame, and on these the wire ropes from the ploughs and from the engine are partially wound. While the ploughs and frame are being drawn forward together, these drums are at rest; but upon reaching the land's end, the travelling frame stops; the drums are by a simple adjustment set in motion, and draw up all the ploughs abreast of each other, each ploughman removing his implement sideways to make room for its successor, so that the travelling frame when at rest becomes a windlass. As each plough reaches the frame, a novel contrivance causes it to throw its particular drum out of gear. The price is £52 10s. We did not see this fully tried, but cannot help supposing that all this cleverness is being wasted in an utterly wrong direction; for one aim of inventors should be to render the farmer independent of the awkwardness of his workmen, by providing him a machine which is as nearly automatic as possible, operating with few hands and little expense. Attempting to pull the plough by steam power while a man holds it, is too much like setting a motive power to work the spinning wheel treadle, but still leaving the distaff for finger and thumb. Messrs. Howard and Baker exhibit also a sheave or pulley, made with a spherical boss or centre, which fits a spherical projection on the axle; an oscillating movement being thus allowed to the pulley, to permit of its self-adjustment to the direction of the rope, and so dispense with a considerable amount of friction and wear.

We should also mention here that Howard's heavy-land plough has this year received an improvement, having in view its draught by a wire rope from a steam engine. By means of small steel pinions, working in racks on the upright stems supporting the plough wheels, and long rods and handles, the ploughman can instantaneously alter the depth of his implement on either side, without stopping or leaving his place.

Let us now come to the steam cultivating machinery exhibited in action by Mr. Wm. Smith, of Little Woolstone, Fenny Stratford, Bucks.

A common seven-horse portable steam engine is set down on the headland of a field, and a windlass, with two large vertical drums, reversing clutches, pinions, and rigger, is fixed near the engine, and driven by a thick rope from a rigger on the engine crank-shaft. There are two wire ropes, ¾-inch thick. One is led from one drum on the windlass along the headland, round a pulley or snatch-block anchored at the end of the ploughing, and then down the field alongside the work to the implement. The other is led from the other drum round an anchored pulley near the windlass, down the field over the unploughed land, round an anchored pulley on the bottom headland, then along the headland, round another pulley anchored at the end of the work, and thence to the implement, meeting the other rope. The two ropes thus form a rectangle, inclosing the plot of land to be ploughed, having four anchored pulleys at the corners. The line of rope nearest to the engine keeps in its place, and is mounted upon friction rollers; the other shifts sideways as the work proceeds, the two anchors at the ends being shifted by hand as required. Each of the moveable anchors is a triangular iron frame, with four long tines, which are dropped into a hole dug one spit deep for the purpose. The two anchors which do not require shifting have a clip action, being made of two pieces something like a letter X, in such a manner that the tighter the strain the more does the expanding anchor lay hold of the sides of the hole containing it. When the implement has been hauled up to the headland, it is turned round in a very easy and ingenious manner: the pulley at which it has arrived is removed to the next anchoring place; the drums on the windlass reversing their action, begin to coil up the slack rope, and the implement, dragged partly by the rope which has been following it, and guided by the other rope now pulling sideways in front, is turned end for end, and commences its return journey. Friction rollers, mounted on small stands, are placed at intervals along the line of work to support the rope, save friction and reduce the wear, and are removed by hand as the implement requires to pass them.

Mr. Smith does not plough; neither does he attempt to thoroughly "invert" the soil, and in this respect he certainly does not comply with the society's conditions, and can hardly therefore have expected the prize. He has introduced a new system of cultivation very successfully upon his own farm, dispensing with the plough altogether. His principal implement is a sort of scarifier frame having a double mouldboard or ridge plough, followed in the furrow bottom by a revolving wheel-subsoiler or forker, and on each side by a cultivator tine to break up the ground overlaid by the furrow slices. A clever steerage is employed; the fore-wheels have cutting discs like plough-skeiths, which prevent them from swerving sideways. The implement takes 32 to 36 inches breadth at a time; and with this or with a grubber Mr. Smith tills, on an average, four acres in twelve hours. The expenses he finds to be as follows:

	£	s.	d.
8 cwt. of coal, &c.	0	8	0
6 men, at 2s. 6d.	0	15	0
Fetching water, &c.	0	3	6
Wear and tear, and interest of capital (the engine and whole apparatus costing say £420)	0	6	0
	£1	12	6

Or 4 acres at 8s. 1½d. per acre.

For Mr. Smith's system of tillage, involving only one operation for one crop, this is cheap enough; but we cannot judge yet at how much cost he could perform ordinary ploughing or some similar work likely to be employed in common farming.

Great credit is due to this gentleman for his disinterested efforts in the cause of steam-culture; though we think his mode of working involves too much labour to prove economical for ordinary purposes.

Mr. Fowler's plan may be shortly described as follows: A portable engine is stationed not on the headland, but half way down the field; so that the implement is at the same average distance from the engine both in its up and return journeys, and a *minimum* length of rope necessary for a certain extent of work is secured: a capstan with two horizontal drums, reducing wheel-work, rigger, reversing action, &c., is set down near to the engine, and driven by a short endless chain instead of a strap or rope. Two wire-ropes are led from the windlass—one from one drum diagonally over the field to an anchorage at one end of the ploughing, and thence alongside the furrow to the implements; the other rope is led from the other drum to another anchorage at the opposite end of the ploughing, and thence to the implement — the ropes forming a triangle, with the line of ploughing as the base, and the windlass at the apex. Thus there are only two anchorages instead of four; and the ropes between the anchored pulleys and the windlass are supported upon friction-rollers mounted on barrows, so constructed as to adjust themselves sideways to the position of the ropes when this is changed by the shifting of the anchors. The anchorages, patented by Mr. Worby, are very clever, consisting of trucks or low waggons, with cutting discs or wheel-coulters, which cut down into the ground, presenting very little obstruction to the waggon's advance along the headland, but resisting a very great sidelong strain towards the ploughing. To weight the waggons earth is thrown into them, a great purchase being thus obtained without adding any permanent weight to the apparatus. The anchorages are drawn forward a few feet at a time as required, by means of ropes for the purpose led round small fixed anchorages to the windlass, and wrapped upon grooved friction-riggers when the movement is needed.

Common surface-ploughing and trench-ploughing two-furrow deep are effected by two implements invented by Mr. Fowler and Mr. D. Greig, of Barking Side, and manufactured by Messrs. Ransomes and Sims. That for common ploughing consists of a frame about 20 feet in length, balanced upon two large carriage-wheels in the middle, and having four ploughs fixed at each end, pointing in opposite directions, one set being high in the air, whilst the other is in work. The ploughs are made with short sole-plates, so that they can work very close together, one being about 21 inches more backward than another. About 4 feet intervene between the opposite set of ploughs. By vertical pedestals and screws above the axle of the carriage-wheels, the ploughs can be set to any depth; and various ingenious contrivances keep the frame in its proper position, regulate the line of draught, &c. The ploughs in the trenching implement are a modification of Cotgreave's trenching-plough. The common ploughing and the deep work were both performed in a workmanlike manner—the trenching especially exciting the wonder of everybody, owing to the hard, stony, and difficult nature of the ground operated upon.

We were present at many trials with the machine for common ploughing, the soil being of the consistency of strong loam, and the work 6 inches deep—in fact good 2-horse ploughing. The width of the 4 furrows taken at once was 42 inches, the length of the field 279 yards. With so many people crowding about the apparatus, and obstructing the interchange of signals between the implement attendants and the windlass-man, it was not easy to arrive at any data as to "time;" but as far as we could judge, the journey from end to end was accomplished in 4 minutes on an average, when the engine was apparently working at 8-horse nominal (or 10 or 12 horse actual) power; the shifting of the anchorage and adjustment of the plough consumed on an average 1 minute more; and 279 yards length of land 42 inches wide in 5 minutes, is equivalent to 8 acres in 10 hours. This fully bears out Mr. Fowler's estimate, that when each of his four ploughs is being propelled by 2-horse power from the engine, only 2-horse power additional is needed for driving all the rest of the machinery, and overcoming the friction of the rope against the ground.

What are the expenses? Mr. Fowler calculates them not to exceed the following:—

	£	s.	d.
10 cwt. coals, &c	0	10	0
4 men and a boy	0	11	6
Fetching water, &c.	0	3	6
Wear and tear, and interest of first cost (a 10-horse engine costing £275), and the machinery and tackle £220 ..	0	8	0
Shifting to the field, with 4 horses and 5 men (say one shift for every field of 12 acres, though 50 acres can be ploughed without shifting again	0	12	0
	£2	5	0

Or 8 acres per day of 10 hours at a total cost of 5s. 7½d. per acre!

Our space forbids us to say more at present. If the trials which are sure to be made on a very extensive scale prove that Mr. Fowler's steam-plough can work efficiently at anything like this cheap rate, his machines will rapidly find purchasers throughout all the kingdom; and whether or nor Messrs. Barrett, Exall, and Andrewe's experiments years ago may invalidate Mr. Fowler's patent, we hope that the Royal Agricultural Society (now that it is a thousand pounds into pocket by the non-awarding of the manure prize) will not be niggardly with the five hundred.

PLOUGHS.

We must not let the novelty attaching to the steam-cultivators swallow up all the interest belonging to other implements; but the trials of ploughs having been largely dwelt upon in these columns last year, and still more the year before, we prefer giving greater prominence to other tillage implements, which have appeared in larger numbers and been subjected to longer trial than was ever known before.

On the stand of Messrs. Ransomes and Sims we saw no less than 32 distinct varieties of the plough, including the YRC general-purpose plough (which obtained the prize at the Lewes, Lincoln, and Carlisle meetings, and also the first prize at the Paris Exhibition—a gold medal and 100 francs), the patent trussed beam YL plough (awarded the prize at the Southampton and Northampton meetings), Lowcock's one-way or turnwrest plough (which received the prize at Shrewsbury, Exeter, Lewes, and Gloucester, and did excellent work in the field at Chelmsford), and Cotgreave's admirable trenching and subsoil plough (which was honoured by a silver medal both at Lincoln and Carlisle). We noticed, too, the Essex "foot-plough," with one handle and a very wide head or cock; and also the very light "East Indian" plough, adapted to the power of a mule or small bullock (or in the East, a buffalo), for use on light soils, where fleet ploughing is required. A great number of these little implements were sold at the Paris show.

Messrs. Howards' plough, that has gained so many prizes, latest of all at Paris and Chelmsford, is particularly worthy of notice. It has been improved by the furrow-turner being made peculiarly taper, straighter, and more convex. It has also an improved head, and the side-cap can be removed, so as to get at the breast without unfastening a number of bolts. The coulter-fastening is extremely simple and good, the stem being clipped against a piece of half-round iron affixed to the beam, and so readily set to more or less land; and all is of wrought-iron. The skim-coulter has been improved in form; and in another plough a very easy method of altering the width of the wheels has been introduced. All Messrs. Howards' ploughs have a draught-chain, which removes the strain from the beam, gives the implement greater steadiness, and lessens the power required to work it. Another advantage in their implements is that the same beam is used either as a common plough, ridge plough, or subsoiler, thus rendering the main framework of the tool as "universal" as possible; and they now send out all steel mould-boards. Their heavy-land plough is the lightest and least, and yet worked successfully in the most difficult ground.

Busby's general-purpose plough took two prizes at the Paris Agricultural Show, and a gold medal at Amiens; and another of his ploughs has obtained six head prizes in eight years. His heavy-land plough is very remarkable, being no less than six feet long from the back of the mould-board to the point of the share, and is of very light draught.

Ball's ploughs were much admired, particularly the one which took prizes at Norwich, Exeter, the Great Exhibition, Dublin, and Paris.

Warren, of Maldon, exhibited his "expanding ploughs," in which the share is adjusted to take more or less depth by means of a hand-lever; the entire body of the implement, in fact, is expanded or contracted vertically. The action is complicated, and we should fear very liable to wear and derangement.

Carson, of Warminster, showed some good wrought-iron ploughs, having steel mould-boards and skim coulters.

Dray and Co. had an "Alliance" plough, having improvements invented by M. Armelian, of Paris, consisting in the point of the share, which is formed of a wrought-iron steeled bar, sliding in a dovetail, which may be projected to any length required. This bar is secured in its place by wedges; and by this arrangement the plough is enabled to work the most stubborn or rocky soils.

Messrs. Sheen, of Aylesbury, have ploughs more especially intended for stiff heavy land; but we doubt whether short mould-boards will be able to stand much longer against the long ones universally adopted by our first-class makers.

Bentall's ploughs are cheap, and able to do excellent work; though, to suit the notions of his customers, he does not yet use iron beams and handles. His turnwrest plough is very simple, the plough being turned bodily over for working in the reverse direction, the handles being the only moveable part; and the weight is not greater than that of some single ploughs.

Messrs. Goss and Peene, of Rayne, near Braintree, showed a considerable number of ploughs with wooden beams and handles, very simple in construction, and strong as well as light. Their double-tom and furrow-plough has the breasts made in two parts, with a flange on one, so as to make a perfect joint in the fore-part, and dispense with the old plan of having a front iron.

Messrs. Fry, of Bristol, exhibited a new form of plough, invented by Mr. Cozens, of Pilton, and called the "Press Plough." The mould-board is so made that the furrow is completely turned over, and the whole of the under-surface exposed for the action of harrows, at the same time that every particle of the stubble or sward is completely buried, and so pressed down by the over-lapping of the mould-board that no vegetation can show itself between the furrow-slices. The fittings of the body are also remarkably convenient and simple.

HARROWS.

The judges very properly divided this class into three sub-divisions—light, or seed harrows, drag-harrows, and general-purpose harrows. Twenty-one sets were selected for trial, eight in the first division, six in the next, and seven in the last.

Light Harrows.

The soil was in a very good state for the light land harrows, and the work was therefore well done. Each set was passed one bout upon a stetch; and the draught, make, fastenings, mode of fixtures to whippletrees, &c., carefully noted.

Messrs. **Ransomes** and **Sims**.—Four three-beamed light medium-sized iron harrows. The peculiar form of the beams (much resembling the letter S) so arranges the teeth that all cut a track at equal distances. They are well braced diagonally; the couplings are new in principle, causing the harrows to keep equidistant, thus perfecting the work. Each tooth has a pressed shoulder, with an oblong shank, and the nut is well secured in its place by a simple fastening or cotter, which prevents its becoming loose. The frame is punched cold; tines are square; teeth cut at 1½ inches. The work was satisfactorily performed; but owing to an accidental omission in the draught-hooks, the harrows pitched in front, and worked irregularly. They received a commendation. Price £4 10s.

Bentall.—This set consists of six three-beamed iron harrows of a peculiar make, a description of double angle iron, similar to his cultivator's beam: it permits the holes in the beam and bars to be punched with facility when cold, consequently ensuring greater truth in the fixings of the teeth. The nut is held fast by a capital contrivance: a guard or keep being riveted against the nut, prevents its turning. The connecting bars are somewhat objectionable, though they keep the harrows very nicely apart. The working in this particular trial was impeded by the couplings, which are of easy adjustment; but evidently qualified for usefulness, as was proved in the trial of the largest set. Price £2.

Coleman.—This is a set of Coleman's well-known expanding harrows. It is made in four "compartments," and is so constructed and connected by joints as to be capable of expansion and contraction to the requirements of the work or stetch, and it is provided with wheels for locomotion, and levers for adjusting the weight in connexion with the wheels; the teeth are screwed into the bars, and also fastened by a nut; the plaits for the joints are cast iron. The whole was new, and apparently required more liberty in working.

Phillips and **Wood**.—This implement is not intended as a harrow. It is their famed poppy extirpator; but it is a good light harrow for light seed land under certain circumstances. This implement is made in frame similar to the patent horse-rakes: the teeth are fixed upright in the frame, consisting of an upright tooth, with three small prongs in triangular form, by which the land is moved. It is of considerable use in clearing the land of young surface weeds. It appeared to work very steadily, and with effect. It was awarded a silver medal.

Williams.—A set of four-beamed diagonal iron harrows, of very good form and workmanship; each tooth cuts a separate track; the draught is from the centre, so that the irregular pace of the horses does not throw a tine out of work; tines are straight and square, heads oval, bars punched hot, fastened by screws, with hexagonal nuts, with shoulders below. These harrows worked very steadily, and pulverized the soil evenly and well, though the land was too strong for their weight. Second prize of £2.

Hill and Smith.—This is a set of wrought-iron harrows, having cast-iron teeth or malleable cast-iron teeth fitted to the frame. The harrow frame is riveted together in a cold state by machinery, the rivets having a projection underneath to receive the tines, which are attached thereto by a key through the projection. The tines are of oval form, and stood their work well. The form of harrow is similar to Williams's. The harrows worked exceedingly well, and pulverized more highly than others, but not so deeply. The tines are short, and cost 9d. per dozen. The fixing is inconvenient, being liable to accumulate weeds, &c. But the exhibitors assured the judges they would soon remedy that defect. Very highly commended.

Howard.—This is a set of Howard's well known harrows, so good in form and every useful appliance. They are of "zig-zag" form, teeth all cut at equal distances; they are provided with centre joints to suit the inequalities of soil, which can be locked at convenience; the draught is from the centre: each harrow is attached to whippletree; have hooks at either end: the teeth are straight, and are secured from loosing by a stop or guard of flat hooping bending opposite ways over the bar, so as to prevent the nut from turning. The work done by these harrows was certainly the best, the joints giving them some advantage, and the depth of cutting good. First prize of £3. Price £3 16s.!

Drag Harrows.

Ransomes and Sims.—This is a set of heavy well-made harrows, of similar construction to their light harrows, but much larger, with oval teeth in lower frame. They cover in work 9 ft. 9 in., and cut every 2 in. The working of these harrows was somewhat defective, simply because the hooks attaching them to the whipple-trees were too straight, instead of bending a little down to counteract the weight of whipple-tree, &c., they pitched in front; otherwise they worked favourably; has 60 tines. Price £4 15s. Highly commended.

Bentall.—This is a set of two-beamed harrows, similar in every respect to his light harrows, but stronger, taking 8½ ft., and teeth 60, all properly arranged. Price £5 5s. Highly commended.

Coleman.—These are his large expanding harrows, similar in make to his light harrows, already noticed; take 8½ ft., with 48 tines; cut every 2½ inches; so rough they work indifferently; the frame too short, and tines too few, to work well at full expansion. Price £10.

Williams.—This set was a pair of large good harrows, his usual make, capable of attaching any number required. These had 30 tines; coupling chains good, tines strongly shouldered, oval form. Price £6. Second prize £2.

Hill and Smith.—This was a similar set to the light harrows, but much larger. They were not tried, owing to a provoking error on the part of the attendant.

Howard.—The large set of Howard's well-known harrows; in all respects similar to those described above. These worked remarkably well, and very steadily, for such clods; take 8½ ft. Price £6 10s. A prize of £3.

General Purpose Harrows.

Ransomes and Sims.—Same as their drag harrows. £2 prize in this class.

Comins.—This is a set of three harrows, with four beams to each; the teeth are a little curved, the beams are bent at every tooth, so that the teeth cut at 2 in. intervals; the frames are rather too short, and the bar too flat; the two fastenings to the whipple-trees are right, and the teeth are secured by two nuts. Price £4 15s. Commended.

Bentall.—Not tried as general purpose harrows, for which they are well adapted.

Coleman.—These are larger and heavier in every respect, but of similar construction to his light harrows. This, from its weight and appliances, worked well on the very rough land, except the two outside harrows, which did not well touch the furrows. It is a good set for wide stetches on clay lands, where the horses take each furrow; has 60 tines. Price £8 10s. Favourably mentioned.

Williams.—Same manufactured form, in shape zig-zag, as his light harrows; takes 10 ft. 8 in., and worked exceedingly well. Price £5 10s. Prize of £3. These obtained prizes at Derby, Southampton, Shrewsbury, Northampton, Norwich, and Exeter, Medal of 1851, and at Lewes and Gloucester.

Phillips and Woods.—This is a unique implement, called a set of duck's-foot harrows. The set consists of three parts, having 6 straight tines in front, and 9 ducks'-feet or heart-shaped share-tines behind to each harrow; only one draught-hook to each harrow, so that in working the rough land they were continually riding on each other; they worked indifferently; the conception is not good, we think. Price £8.

Howard.—Same in make as their drag harrows. They received first prize at Derby, York, Exeter, and Lewes; at Gloucester, two first prizes; also two first prizes at the Highland Society's meeting, two first at the Royal Agricultural Improvement Society of Ireland, and three first prizes at the Great West of England Show for 1855. Price £5 11s. Prize of £3.

CULTIVATORS AND SCARIFIERS.

In this class the same subdivision into three classes was adopted. 1st, cultivators for heavy land; 2nd, ditto for light land; 3rd, scarifiers or paring implements. In these classes about 20 implements were submitted for trial, and several of these were again permitted to compete as paring implements, some of them executing the work with remarkable precision.

Heavy Land Cultivators.

Crosskill.—The old "Ducie Drag;" covers 3 ft. 6 in. It is so well known that a description here would be superfluous. The arrangement of the 5 tines is not excelled by any, but the number is few. It worked with its shares on, but would have done better with points, as the land was very hard. No difficulty, however, seemed to impede it, and its work was well dragged up—more than others, but rougher. By turning a small handle it is soon raised out of work. Price £11. Highly commended.

Ransomes and Sims.—This is a new implement, of triangular shape in front; it is made chiefly of wrought iron, including its seven teeth, which are of ready adjustment to suit the various depths and positions required, and track at 8 in. intervals. It covers 4 ft.; is adapted to hill-sides by two side levers. Its arrangement of tines is not perfect, the three front ones being somewhat too close, and all too much in line, which is easily obviated. It worked well, and was again tried as a paring implement. Price £16. Prize of £2.

Bentall.—Takes 4½ ft. Description is superfluous here, it is so well known. The work was tremendous, but this implement steadily pointed its way with surprising equanimity; we say *pointed its way*, because we were given to understand that the peculiarly set points before the shares is essential to enable the implement to penetrate the hardest soils with steadiness, and to enable it to continue its adherence to the subsoil without springing out on to the surface, as was the case with most others tried. There is an additional improvement this year in the construction of two back curved tines, thus diminishing the danger of clogging. Price £7 19s. 6d. This implement appears favourable in two more phases. Prize of £3.

Coleman.—This is Coleman's well-known prize cultivator. Takes in work 4 ft. 6 in., and does its work exceedingly well at any given depth. Its system of leverage for lifting out of work, and its independency of action, are the best arrangements with which we are acquainted. It appears again as a paring implement. Price £14 10s. This price caused the judges to hesitate in awarding the prize of £3.

Carson.—This is a better implement than its somewhat homely appearance indicates, and is readily adapted to its work, and easily managed. It has independent steel shares, heart-shaped, and couching tines, which are intended for either cutting or paring as well as breaking up and pulverizing the soil. It is thrown out of work by a single lever. It takes in work 4 ft. 3 in., and is provided also with side-leverage, has seven shares, and is in form somewhat triangular. The front teeth are too close. Tried again as a paring implement. Price £12. *Very highly commended.*

Hill and Smith.—Takes 4 ft. in work. The teeth are called snake-nosed. It consists of a strong wrought-iron outer frame carried upon 3 wheels, by which also its depth is regulated. Inside this frame is another, to which is attached three broadshares when it is required for paring, or five grubber tines as a cultivator. The handles are fixed to this frame, which is so fixed to the outer one that the implement is very easily thrown out of work by leaning upon them, and is a great feature n its favour. When used for paring, a regulating wheel is used in front. Price £8 10s. Highly commended.

Williams.—This is a conception by no means in accordance with the well-known views of our great Society—simplicity of construction with economy in price. It consists of a frame about 2 ft. 9 in. wide, 3 ft. 2 in. high, on four wheels; has five beams, to which are attached drag tines or cutting shares. It failed in working, by clogging repeatedly. Price £20 to £24.

Crosskill.—The well-known old Norwegian harrow. We were surprised to see this implement break and pulverize these hard clods, which only a few of the clod-crushers could touch effectively. It is a very useful implement, and not sufficiently appreciated. Price £15 15s. Highly commended.

Cultivators for Light Land.

Ransomes and Sims.—It has a goose-necked beam in front, to which the wheel is attached, and made of wrought trussed iron. Clasps to tines fastened by screw and nut, triangular shape; has a draught rod and five tines, and two wheels behind. It worked very well and steadily. Price £6 5s. 6d. Commended.

Page and Girling.—It consists of two truss bars in frame, with coulters fastened between, with clasp nuts and screw; is thrown out of work by lever and a ratchet and chain; heart-shaped shares, two wheels upon swivel, swing bar in front, double draught. It worked irregularly, and was with difficulty altered. Price £12.

Comins.—Tried as a paring plough. Did not answer in this class.

Coleman.—This is a modification of Coleman's scarifier. It has a wheel of 15 inches, swivel bar, and is elevated by a rack and plate, fastened by a clip; cast-iron shares; the tines are arranged better, to prevent clogging. Price £8 10s. Prize £3.

Phillips and Woods.—This is an improved Finlayson's harrow, too well known to need observation here. Price £11 11s. Prize of £1.

Hill and Smith.—This is the double skim plough, the shares fixed in the outer frame, and working towards each other; takes 2 ft. 2 in. to 3 ft.; a swivel wheel in frame on goose-neck beam. Price £6. Commended in the paring class.

Warren.—It has four side hoes and one middle. Clogged much. Price £5 15s.

Warren.—This has two beams of wood, braced side coulters, two small wheels, two winged shares, working towards each other. Worked indifferently. Price £3 12s. 6d.

Bentall.—A modification of the well-known implement. It worked admirably. Price £7 19s. 6d. Prize of £3.

Cornes.—A rotary cultivator. It has thirty-six spades, revolving by the motive power applied; diameter, 3 feet; penetrated 11 inches in the light land, but did not break up or pulverize the land to any extent. Intended as a digging machine. Conception by no means good. Price £25.

Paring Implements.

Ransomes and Sims.—The same implement named above converted into a parer. The land was remarkably hard, and it appeared perfectly ridiculous to attempt paring it. This implement could not penetrate and keep steadily in work, but would do well enough in proper work.

Page and Girling.—This, from the same cause, could not be made to pare acceptably.

Comins.—This we have named above. It did its work remarkably well, but has only one share, on Glover's principle. Received a favourable mention.

Coleman.—This is the same implement as above, converted into a most effective parer or scarifier. It pared thinly and well, considering the almost utter impracticability of the work. Prize of £3.

Bentall.—Precisely the same implement as named above, adjusted for scarifying or paring. This worked the steadiest on the hardest of all soils, but could not, from the construction of its points, which would be penetrating, pare so thinly as Coleman's. In other points it was equal; so that, setting steadiness of work against the penetrating points, it was deemed to possess equal merit in the trial, and received the same prize of £3.

Carson.—This was also the same implement as named above, prepared as a paring implement, and, hard as was the land falling to its lot, it did its work very creditably. It was accidentally broken.

Hill and Smith.—Named above in light land class. Commended.

SUBSOILERS.

This class was simply subdivided into two classes—Subsoilers for deep work, or breaking up the furrow sole or pan, and subsoilers for bringing the subsoil to the surface.

Subsoilers for Deep Working in the Furrow Pan.

Comins.—It is his Norwich prize implement; has three pulverizers; to be worked at different depths, as required, or all alike; is a light implement; worked well for awhile, but could not abide the strain, and broke. Price £4 12s. 6d.

Barrett and Exall.—This is Read's well-known subsoiler, improved by the exhibitors in strengthening its various parts, and adding two additional shares or points. It was rather tedious to await its adjustment to the various depths it was required to work, but it did its work favourably. Prize of £1.

Dray and Co.—This is a very effective, strong, and useful implement; its three tines are placed diagonally in the frame, the arms of the first and last being inserted into horizontal mortises in the frame, and can be expanded as required; thus gaining power in work and in the pulverization. Price £6 15s. Prize of £4.

Smith.—This is Smith's prize subsoiler. Its peculiarity is in its one chisel-pointed coulter; well formed and adapted to its work; it turns up the soil at great depth, and throws it out rather too much on either side. Price £3 3s. Prize of £4.

Coleman.—This implement rather pitches in work, but pulverizes at considerable depth; its depth is easily regulated by a lever, and the same inclination is preserved at any given depth. It accidentally broke a share point, and another came off.

Ransomes and Sims.—The Archimedian subsoiler, invented by Lord C. Beauclerc. It has a wrought iron truss beam, with two wheels in front (like Read's); skife upright. It has a double share and a revolving armed screw in the furrow sole, which makes it, we thought, rather hard work for the horses. Price £5 17s. 6d. Prize of £3.

Bentall.—The same implement as named above, now converted into a subsoiler. For steadiness in work it outdid all others, and its effective and deep pulverization of the subsoil to the same depth quite equal, and at the moderate price in this department of its usefulness of £3 13s. 6d. Prize of £5.

Read.—Read's subsoiler in a somewhat different form. It could not be got into the subsoil to any useful purpose.

Howard.—This most useful implement, strong and well adapted as it was, would not effectually work this hard subsoil, and, as we thought, simply because the two tines or coulters were placed too near each other in the frame. They tore up the subsoil at very great depth, but in too large lumps, causing it to clog in work. Price £5 15s.

Howard.—This is a simple transformation of Howard's patent plough into a subsoiler, by taking off the ordinary body, and attaching a subsoil frame. In this state it worked admirably, and the price only 20s. extra, or as it worked the price was £3 12s. 6d. Prize of £3.

Subsoilers for bringing the Subsoil to the Surface.

Cotgreave's trenching plough, price £10 10s., obtained a silver medal, and is an admirable implement for working at a great depth.

CLODCRUSHERS AND ROLLERS.

This class was very properly subdivided into three classes: 1st, Clodcrushers, serrated, spiked, &c., &c.; 2nd, Plain field rollers, &c.; and 3rd, Light land or barley rollers.

Clodcrushers, serrated, spiked, &c., &c.

Wood and Son.—This roller is upon the screw principle in the construction of its serrated discs, which are 24 in. in diameter; the raised or serrated concave cogs, taking the width of roller, form a spiral of a gouge-like series, and appeared on viewing likely to be very effective crushers of the hardest clods. It takes 6 ft. 6 in. to 7 ft. In work upon the hardest of clods it showed unmistakable signs of clogging, the discs not being sufficiently independent in action to clean each other, and the concave cogs appeared inclined to hold the soil rather than to get rid of it—not truly good in principle. Price £17 10s. and £19 respectively.

Crosskill.—This is Crosskill's old clodcrusher, of which we need say no more than that it fully retained its world-wide character for excellence in working and workmanship. Price from £17 10s. to £19, according to size. Prize of £2.

Crosskill.—This is the improved crusher, and differs from the old one by a series of discs of alternate sizes, each alternate disc being three inches larger in diameter; the holes in the larger discs are made large enough to correspond with the difference in the diameter, so that both larger and smaller discs are thus made to pass upon the soil all at once. The difference in the sizes, as the rollers revolve upwards, causes any adhering soil to fall off or be pushed off in action; by a large boss and centre flange it causes the discs to revolve round perpendicularly not irregularly, or leaning from side to side as in the old crusher. Price £17 10s. Prize of £3.

Crosskill.—His improved Norwegian harrow, already noticed in the cultivator classes. It broke the clods exceedingly well without clogging, and was highly commended for its many useful adaptations as a clodcrusher and pulverizer. Highly commended.

Ransomes and Sims.—This is Crosskill's old crusher, improved by the exhibiters. It consists in the application of alternate discs of two different diameters on the same axle, with holes of the same size to correspond, as in Crosskill's crusher, but much greater in the difference; the smaller discs revolve in different circles, so that no soil, "however moist or sticky, can clog them up, or cause them to become a smooth solid mass." The serrated cogs are larger and more effective to crush: "No disc can rise over a clod without lifting all the rest." Price £20 10s., large and heavy. Prize of £2.

Barrett, Exall and Co.—This is a good implement as a wheat-presser and roller. It consists of a series of discs or rings of 24 in. diameter, the outer edges of which are slightly serrated in flat, and made of a shape intended to produce the effect of the tread of a sheep's foot, not to leave the surface smooth and flattened. The discs or wheels are fitted with brass bushes, and the arrangement of the bosses in passing round the axle is such as to cause a rise, so as to prevent clogging. Price £16 5s. Commended.

Cambridge.—This is Cambridge's well-known grooved or concave roller, of which 1,052 were sold in four months of last year. "It cuts the large clods, and reduces the small ones to dust." The series of rings are so made that in fitting to axle they form a concavity between each disc, and a somewhat cutting edge on the top of each disc, which is very effective in work. Price £18. Prize of £2.

Comins.—This has two rather small serrated discs working on two axles, and within each other. The serrations are good. It worked effectively, and is a good two-horse implement. Price £17. Highly commended.

Coleman.—This is what was called a full-disc roller, corrugated in sections. The discs are about 2 ft. 6 in. diameter. The discs are each made like a frill, so as to abrade the surface. It works on two spindles with swing joints in the middle of roller. It was new, and not well prepared for trial, as it not only showed signs of clogging in work, but the parts caught each other. Price £21.

Day and Co.—A heavy roller, 30 cwt., 6 feet width. The improvement in the roller consists in combining narrow-edged serrated discs alternately with rather broad-faced presser-wheels or discs, "the latter having the centre holes made larger than the others, thereby combining the crushing action with an immediate abrading and self-cleaning motion in rolling the soil." This roller worked well—crushed effectively. The serrated discs we thought not quite prominent enough to cut sufficiently deep. Price £19 10s. Prize of £2.

Utting.—This is another heavy roller, 25 to 30 cwt., and upon a new and novel construction. It consists of two sets of rings working on two axles, and partially between each other. The front set are narrow, and have sharp serrated edges; the back set have flat rims, are rather small, and revolve between the front set. The two sets of rings can be so adjusted as to work the sharp edges to any required depth. It can also be used simply as a roller, by putting on the travelling wheels to regulate the cutting edge discs; or if great weight is required, a balance can be attached behind, so as to throw the whole weight of the implement on the flat rims, thus giving a pressure of nearly two tons. As a clod crusher and roller combined, it can readily be adjusted to use by a simple contrivance for that purpose, and in any relative position. It cut in work very deeply, but it was not regulated for crushing, nor were the travelling wheels at hand to try its utmost power, which was evidently very effective. The balance behind is by long leverage, which is inconvenient; but this might be obviated by other arrangement. Price £18 10s. Highly commended.

Dray and Co.—This is a capital roller, and presents a novelty in construction which is very good. It is in the employment of a straight square axle, with a series of eccentrics fixed or manufactured upon, or made to it, and are so arranged that their centres shall be on the same horizontal plane or line. A self-cleaning action is thus obtained, owing to the peripheries of the discs continually crossing and recrossing each other. This intersection of the discs coming into contact with the soil causes a grinding action whereby the clods are reduced to a fine mould. The discs and eccentrics are case-hardened. The draught is from the middle of the frame. The nuts are held fast by a simple contrivance. It worked very satisfactorily. Price £19 10s. Prize of £3.

Dray and Co.—Same as the above, but smaller. Price £18.

Carson.—This is a very useful implement for general purposes. It possesses a number of cross-cutting projections on the series of discs, and at right-angles to them, and the outer edges of the discs are rounded to prevent injury to corn, and they all revolve independently round the axle. The cast-iron box for axle-end is good. It is also provided with a well-arranged scraper, of easy adjustment, to suit the rollers in work. The scraper was too close on first trial, being removed a little backward it worked remarkably well. Price £16. Highly commended.

Field Rollers (plain and grooved, or in plain sections).

Cambridge.—This is an improved Cambridge. The improvement consists in running the discs upon a round axle with triangular holes or bushes in each disc, and every alternate disc is 1½ in. less diameter, so that they run at quicker velocity, ensuring more perfect working. Price £14. Highly commended.

Coleman.—This is a large smooth-jointed roller, with plain flat discs running in axles resting in swing bushes. The middle apparatus not good, and hindered in working. When on the level it worked well, but it is entered for narrow stetches. A little alteration will put it right in working. Price £20. Commended.

Fisher.—This consists of three cast-iron cylinders, 19 in. diameter, with knibs or projections upon the face. The boss at the ends is hollow, with a tube running from the face of the roll to the boss for giving facility to work them, &c.; a scraper is attached. Each of the three cylinders runs in two bushes. Price £12. Commended.

Fisher.—Similar to the above. The knibs made to resemble a sheep's-foot; but we thought the arrangement wrong, inasmuch as the treading resembled a sheep walking backwards. The pipe or tube for oiling and the grease-boxes good, like railway-carriage grease-boxes. Price £12. Highly commended.

Ransomes and Sims.—A highly advantageous field-roller. It has three cylinders of cast-iron, each 2 ft. diameter and 2 ft. 2 in. long, turning on axes independent of each other, thus avoiding slading at the ends; it weighs about 15 cwt. Price £15 15s. Prize of £2.

Dray and Co.—Same as above, very suited to a field-roller.

Light Land or Barley Rollers.

Ransomes and Sims.—This is an exceedingly nice little roller for light work and many useful purposes, very similar to their last-mentioned roller, but much smaller, cylinders only 10 in. diameter. Price £8. Highly commended.

Bentall.—This is a small double cylinder roll, fixed on two separate axles, with a joint in middle, and not running straight with each other; well qualified for barley rolling or stetches. Price £8 8s. Prize of £2.

Hill and Smith.—This roller is a novelty. It consists of two wrought-iron cylinders of 2 ft. diameter, taking 7 ft. 6 in. in width, and is so light that one horse will work it easily. The small diameter of barley rollers is in general objectionable. This is a large cylinder without increasing the weight. It is formed of wrought-iron plates upon angle-iron rings, which form the ends of each cylinder, riveted strongly on. The lightness and large diameter attained entitled it to the prize it received of £2. Price £10 10s.

It may be right to observe that all the clod crushers or rollers named in this class, and indeed all the rollers exhibited, were of iron.

REAPING MACHINES.

One of the greatest improvements hitherto added to the long unmanageable but now successful "reaper," is the spiral or screw platform of Messrs. Burgess and Key. The action is so simple and effectual that the corn is delivered sideways in a perfect swathe, leaving a clear track of 5 ft. 8 in. for the return of the horses; yet without adding materially to the draught of the machine. A man or lad to drive is the only hand required; and the horses preceding the machine instead of following, as in Crosskill's Bell, it is very easily guided. The method of driving the reel, and indeed the entire machinery, is most simple; and the general arrangement and position of the frame, carriage-wheels, and cutting edge are very judicious and well contrived. The cutters are M'Cormick's sickle-edged knives, in connection with spear-headed fingers, free from liability to clog, and very effective. With two horses it is able to reap 1¼ to 1½ acres per hour. Price £40.

Crosskill's Bell's Reaper, in which the horses propel from behind, was exhibited in two forms—one, as shown last year, in which the corn falls upon an endless web for delivery; and the other possessing several valuable improvements. The new machine, like its predecessor, cuts a width of 6 ft. 9 in., and the price is £42. The entire frame is remarkable for its very compact size; the wheel-work is entirely new and much simpler; a fly-wheel gives great steadiness and regularity to the various movements; and a novel delivery-apparatus has considerably lessened the power required to work the machine. A boarded platform, elevated at an angle of about 45 degrees, has three vulcanized India-rubber belts continually passing across it in front, which, by means of wooden studs upon them, pass the corn off at one side. These endless belts are distended upon two rollers, one on each side of the platform, having swellings upon them for holding up the bands in their places. The reel revolving very close to the sloping platform, actually lays the corn evenly upon it, instead of trusting to the order in which the ears and stems may happen to fall. The cutting-knife employed by Crosskill is more acutely formed than M'Cormick's, but obtuser than Hussey's, and is serrated; and the fingers are made with arches in them to prevent choking: constituting, we should say, one of the best possible forms of cutting apparatus.

The work made by both Crosskill's and Burgess and Key's machines was very superior, and no difficulty could be found in gathering and binding their regularly-laid swathes.

Dray's Hussey's reaper was much approved for its well-known tilting platform, to facilitate delivery; skeleton knives, rendering choking impossible; a leverage, for raising and lowering the cut; balance-weight on the shaft, which works the knives, so as to obviate vibration; and swivel-wheel, to support the pole of the frame, and thus relieve the horse from unnecessary weight. The price is only £25; the machine is well adapted to cut 10 acres in 8 hours; and the work was certainly very admirably performed, the corn being delivered behind in separate bundles, ready for tying into sheaves.

Dray and **Palmer's** "Union" reaper is on the same principle as the foregoing, but has a curved platform, fitted with friction and also rotating rollers, to secure an easy side-delivery. It has also a very neat, light, and effective dividing-iron affixed to its outer edge, consisting of a spear-shaped head and two receding prongs (a long and a short one), which separate and put back the standing crop from the cut corn, thus preventing entanglement.

Our own opinion is decidedly in favour of a reaper that is self-acting; for, modify and improve as much as you like, the hand-raking must always be a laborious and purely mechanical operation; and we more especially commend the efforts, therefore, of those who are endeavouring to perfect a side-delivery by simple mechanism, and so dispense with all manual labour but that of a driver.

DRAINING TOOLS.

Messrs. **Burgess** and **Key** obtained the prize for a complete set of draining tools invented, improved, and manufactured by Francis Parkes, of Birmingham: they are of the very best construction and material. Price £1 15s.

Clayton's "cycloidal form" cast-steel-blade tools of all kinds for light land; and his "spear-shape" and "tri-faced" tools for gravelly soils or hard compact clay, were much admired.

Mapplebeck and Co. exhibited a considerable number of sets of their celebrated Lyndon's draining implements; and Mr. **Bailey Denton** showed various specimens of tools, wells, outlets, &c., used by the General Land Drainage and Improvement Company.

TILE AND BRICK MACHINES.

Whitehead's prize drain-pipe and tile machine maintains its character as one of the best yet produced. It will make pipes up to 6½ inches diameter, or with expanding mouthpiece up to 15 inches diameter: it is easily worked by one man and two boys, and the price is £21.

Scraggs's single-action tile machine, price £18, also obtained a prize.

Clayton's prize "Combined Clay-preparing and Brick-making Machine" is an extraordinary and valuable invention, by which, with a steam engine of 3 or 4-horse power, 18,000 to 30,000 bricks are produced per day. The rude clay is fed into the cylinder or body of the machine, in which it is thoroughly incorporated, tempered, pugged, and then carried down to a chamber at the bottom of the cylinder, from whence it is continuously discharged in streams through moulding and compressing orifices in perfectly formed rectangular blocks, the size and shape of bricks edgeways, with clean faces and beautifully sharp angles. A large extent of our space would be needed to describe and eulogise this wonderful machine, which has accomplished a long-desired object, and will effect great changes in the building as well as the agricultural world. Clayton's pipe and tile machine, with vertical action, and double cylinders, price £25, was also commended.

STEAM ENGINES.

Of these our mention must be very brief. Messrs. **Hornsby** exhibit four of their first-class portable steam-engines, and one fixed ditto; the leading peculiarity of the former consisting in the cylinder and pipes connected with it being placed inside the steam-chamber of the boiler, where they are effectually protected from weather and frost; a saving of fuel is effected, and condensation in the cylinder is prevented. Price of the 8-horse engine £255.

Messrs. **Ransomes** and **Sims'** engines are fitted with an improved heating apparatus, by which the proportionate consumption of fuel is lessened. They exhibit several, varying from 4 to 10-horse power each.

Messrs. **Tuxford** and **Sons** showed portable steam-engines from 4 to 10-horse power respectively; all constructed on their patent principle, having vertical cylinders; the engines enclosed in iron houses. The boilers are of an improved construction, in which flues and tubes are combined. Price of their 8-horse portable engine £240.

Messrs. **Clayton** and **Shuttleworth's** portable engines are peculiar for their having the cylinder and slide-box placed in a jacket, the space being filled with steam, while the outer surface, being in the smoke-box, is surrounded by heat of 400 degrees and upwards; thus preventing radiation, &c.; yet the working parts are all easily accessible and very simple. Price of the 8-horse engine £255.

Burrell, of Thetford, showed several very beautiful engines, simple in construction, easy to manage, and with all the working-parts outside the boiler and ready of access. Price of the 8-horse engine £250.

Nicholson, of Newark, exhibited a small portable engine of about 2-horse power, arranged with a view of doing the work connected with stall-feeding in a convenient and easy manner. It is worth while to consider whether using an engine of this kind would not answer better than employing a larger engine for such small-power machines as chaff-cutters, crushers, slicers, &c.

Haywood, of Derby, shows a novelty in the form of a portable engine, with a vertical cylinder affixed to the side of the boiler: not very elegant in its appearance, whatever may be its advantages.

Wedlake and **Dendy** have also something new, consisting of an apparatus by which the steam can be injected into the tubes of the boiler in order to cleanse them—being a very doubtful kind of improvement.

COMBINED THRASHING MACHINES,

PORTABLE AND STATIONARY.

In this class there is no "new implement," but there have been many improvements introduced, that require some record, and there are a few more names to notice of manufacturers who are exhibiting and making good implements.

Messrs. E. and T. Humphries, of Pershore, Worcestershire, have thus improved their machine: The valuable riddle—a thick mahogany board, with holes bored in a direction slanting to the blast (or inclined to the plane of the riddle)—we mentioned last year: it has been adopted by several other makers. There are two pulleys, by which arrangement the motion communicated can be discontinued at pleasure, without throwing off the strap. A kind of forked lever attached to the frame is used to shift the strap from one pulley to another with the greatest ease. This machine has the advantage of a perfecting apparatus—that is, a double blower—by which a perfect sample is obtained. Another improvement is made by dividing the vibrating trough, so as to balance itself. As a whole, the machinery is simple, and the bearings few. The price is £93.

The next machine we have to notice is Messrs. Hornsby's. This is now made a very perfect finishing dresser. The addition to effect this perfection of the sample consists of a patented worm, which delivers the grain and pulse to the dressing machinery, loosening and separating them by the way. The four different separations—head, seconds, thirds, and chaff—are efficiently managed, and four sacks are attached behind to receive them—all well under the command of one man: the first tailings are completely under command. The bearings seem to be rather numerous, and the details complicated. The price is £128.

Mr. Maynard's Patent Combined, &c., is a valuable machine. Much attention has been given to the effectual separation of the chaff from the pulse. There are elevators specially to raise the *chaff* a second time, which, by a simple arrangement, is delivered in a better state than from any other machine in the yard working at the time of our visit. Goucher's beaters are used. Price £103. It is less complicated than many machines of this class.

Messrs. Roby and Scott, of Lincoln, showed a machine which seemed to do its work well. It makes two separations of grain, and the seeds fall on the cloth beneath. There are two blowers and one set of elevators; the working parts are easy of access for oiling; but, as a whole, we thought the affair somewhat complex. Price £120.

Messrs. Tuxford and Sons, Boston.—This machine has much to recommend it. Its running bearings are few, eight in number, while in many we observed ten and twelve. It absorbs accordingly but little power, about one-fourth less than any other machine. The elevators are within-side, and its whole construction very simple. Besides the addition of a finishing apparatus, it remains pretty much as we described it at length last year. Price £115.

Messrs. Ransomes and Sims.—The chief thing we here observe is that whereas all the movements last year were rotary, they are not now. Instead of the rotary riddle there is the old vibrating one, with a stout cane bottom. We are sorry to observe the abandonment of the rotary principle, and think that some adaptation of Nalder's patent might have effected the purpose for which it would appear that Worley's patent revolving riddle was not sufficient. We were much pleased last year with the immense reduction in wear and tear, and the great steadiness of the frame, consequent upon the rotary motion, and we very much hoped that the machine in this respect might go on, and not go back. Brinsmead's patent shaker, with which we were not much enamoured last year, is still retained. A finishing apparatus has also been added; and the price, with the addition, is £100. We noticed that for brasses have been substituted wooden couches: teak we believe to be the wood employed. These do not wear nor heat so speedily as brass: they are more easily replaced, cheaper, and permit of very little noise. In a few other cases we noticed the same introduction. This firm also had complete barn works exhibiting, which turned out a capital sample and well thrashed straw. Price £150.

Messrs. Clayton and Shuttleworth, Lincoln.—This firm were first to introduce the finishing apparatus last year. They have been followed by almost all the manufacturers, some of whom have adopted the same rotary riddle (Nalder's patent), while others have depended on their own invention with more or less success. After the corn has passed the hummeller into a hopper, it is raised by elevators and thrown into a slanting cylindrical rotary screen which revolves against it, and is kept clean by a fixed brush that traverses its length at top. A fan situated at the lower end of this screen directs a blast upwards through it, driving out at the upper end all lighter impurities, the dust finding escape through the wires. As the grain is dismissed at the lower end, when it is nearest the blast, the final separation of tail is very nicely arranged; for we have been the more particular in describing the patent because we have referred to it when speaking of Messrs. Ransome's machines. Goucher's drum-beater is as yet adopted; but this firm is about to introduce one that will avoid all splitting of the kernel, and yet give out unbroken straw. The shaker is slightly improved; more perhaps in the motion given to it than by its form. Price £103. Their fixed barn-works are £150.

Messrs. Barrett, Exall, and Andrewes.—This rising firm is producing some very excellent machines. They this year exhibit an improved drum and breastwork, both made of wrought-iron. The beaters are perforated at an angle of 45 degrees with the drum spindle. This invention appeared to answer very well; for the sample was not at all disfigured by broken kernels, and, as they offer less resistance to the straw, there must be a great saving of power. For barley it answers to admiration. We have here, too, a patent finishing apparatus, into which, after passing before the first blast and through the hummeller, the grain is introduced. The riddles work reciprocally to and from each other, thus obviating much vibration. This is a point we should all look to. The machine appears very simple and easily worked. Price £96.

Messrs. Brown and May, of Devizes, show a useful combined portable machine, value £93.

Mr. Burrell, of Thetford, has made very commendable and, on the whole, successful efforts to produce a good machine in this class. We have here again the finishing apparatus. Mr. Burrell has had the good sense to adopt Boby's patent screen (see our observations on dressing machines). Behind we find a double cane riddle, by which means capital chaff is obtained. There are 13 square feet of riddle surface, which is an immense advantage. We could find no corn where it should not be; the work appeared to be thoroughly well done. There is only one set of elevators, and all arrangements are simple, and bearings few. Goucher's patent beater is applied. The price is £10. The shaker is not so durable a one as many others.

Mr. Alfred Sparke, of Norwich, exhibits a thrashing and dressing machine, which does its work very well. The machinery is very simple, and the running bearings are few. It does not perfect the sample for market. Price £100.

Messrs. Garrett and Sons, of Saxmundham.—On this stand we observed a very important improvement. The machine is not driven from the drum, but from a counter shaft; the drum axle is, consequently, saved the immense strain it so frequently sustains, and the danger too of losing its proper balance. This firm brought out at Lincoln a revolving screen, by which the dressing operation is perfected: it resembles Nalder's patent very much, and this they retain. Price £112. There are also stationary barn works, fixed up with brick work. Their performance is excellent. Price £147.

Mr. Coleman, Chelmsford.—There is one of Clayton and Shuttleworth's machines, and one of Mr. Coleman. The latter has nothing particularly novel about it: the blast seems well-arranged, the mechanism is not remarkably simple, and the price is £95.

Messrs. Holmes and Sons, of Norwich.—There is no change or improvement here except the adoption of Humphries' riddle, and an efficient arrangement by which the concave can be altered and set while the machine is at work. The shaker is simple and good. Price £115.

Mr. Whitmore, Wickham Market.—The machine exhibited on this stand is not one for finishing. The shaker is in two portions: the riddle, or working shoe, is in two parts, arranged so that the vibration of the one counteracts that of the other; thereby ensuring steadiness. The running bearings are few, the mechanism is simple, and the price is £95.

It is a difficult task out of all these machines to say which is the best, because some excel in different arrangements and adjustments. The best improvements are perhaps the two pulleys mentioned under Messrs. Humphries, the wood bearings adopted by Messrs. Ransomes and Sims, driving from the countershaft practised by Messrs. Garrett and Sons, and the patent drum-beaters of Messrs. Barrett Exall, & Co. The finishing apparatus is adopted by nearly all, most conveniently so perhaps by Messrs. Hornsby and Messrs. Tuxford and Sons.

HORSE POWER AND SIMPLE BOULTING MACHINES.

In this class we give decided preference to the machines exhibited by Messrs. Barrett, Exall, and Andrewes, Messrs. Page and Girling, of Woodbridge, Suffolk, and Messrs. Ransomes and Sims.

Messrs. Barrett and Co.'s two-horse thrashing machine and gear is not, we think, surpassed by anything in the yard of the same description. The patent horse gear is the most secure from accident, and works well with one or two horses; and the concentric movement for regulating the machine is a most simple but important arrangement. We would advise the two-horse power fitted with the third shaft, because three moderate horses will work more evenly than two powerful ones, and upon the evenness of the running depend the quality of the work. These are most valuable for small farms, and hundreds of them are being sent to our colonies. The first prize and a gold medal were given to it at Paris, June, 1856. It looks so compact and safe. The whole of the horse-gear machinery is here enclosed within a cast-iron cylinder, with a moveable cap, revolving when at work on its upper surface. On the inner edge of the cylinder are a set of cogs, which work into three loose wheels, and communicate the motion to a pinion on an upright shaft in the centre, on the bottom of which is fixed a bevil wheel working into a pinion, which communicates the power to the outside, giving 33 revolutions for each circuit of the horse, so that if the horse travels round 3 times a minute, 99 revolutions are given per minute to the lay shaft. It requires but little oil, and is not exposed to weather. Brasses, braces, connecting rods, &c., are all to be had of the manufacturer, and substituted in place of broken ones by any man. The barn work is either of iron or wood. If iron, the price with horse gear (two horse) is £50; if wood, somewhat less.

Messrs. Page and Girling's machines are of two kinds—a five-horse and a two-horse; the one costs £55, and the other £40. The two-horse machine is going abroad very much. We were particularly struck with the superiority of the workmanship. Every part seems to be thoroughly made. There is a reverse motion given to the drum, which appears to free the straw from corn to such an extent that a much shorter shaker is used. We observed also a self-regulating spindle, which suits its length to the possible shifting of barn or horse works.

Messrs. Ransomes and Sims have three machines of this class—a four-horse, price £66; a three-horse, price £53; and a two-horse, price £42. They have all undergone improvement, and much attention has been paid to obtaining speed, with as little distress to horses as possible. Thus, if the horses walk at the rate of two miles per hour, the drum revolves 1,000 times per minute, which is a speed quite sufficient for good thrashing. The two-horse machine is very valuable, and seems to be a public favourite. The drum is 5 ft. 3 in. wide, with 5 beaters, and will thrash 20 bushels per hour. The horse-gear is simple, and fitted with an intermediate motion, to obtain a requisite speed; answers admirably for driving chaff-cutters, and crushing-mills, &c. The workmanship is good.

The two-horse power exhibited by Messrs. Wood and Son, of Chelmsford, is simple: the intermediate motion applied is very valuable. It is cheap, and well made. Price £16.

Messrs. Williamson, of Kendal, exhibit an improved one-horse gear-work, one of the simplest and cheapest things of the sort we have seen. It consists of a large bevel-wheel and pinion, communicating the motion to a second pair of wheels; all compact and readily fixed. It is well adapted for driving a chaff-cutter, making 140 revolutions per minute. The price is £7 10s.

Their two-horse-power thrashing machine is a capital implement. The workmanship is good, though plain, and the price is much below the ordinary mark. (Horse power and barn works complete cost £28.) We hope the example of reduced cost may be followed by other manufacturers; we doubt not those who do will be amply repaid. This machine will thrash from 20 to 30 bushels per hour. The drum revolves at a high velocity, and is driven by means of a belt working from a pulley fixed upon the end of the driving shaft. The arrangement just introduced constitutes an improvement of great value; and machine, by means of a handle regulating the belt upon fast and loose pulleys, can be stopped and started at pleasure, without regard to the motion of the horses, and works better and more steadily than in the case with the common gear.

Messrs. Smith and Ashby show an improved horse-power gear, price £10 10s. It seems strong and well made, but there is nothing novel in its construction.

Mr. Fisher, of Thrapstone, shows a very neat one-horse-power, in which all the wheels are enclosed, and an improved flange or socket for the pole is to be noticed. The price is £12.

The two-horse-power of Mr. Burrell, of Thetford, is commendable. Price £18.

Mr. Sparke's one-horse-power we thought particularly compact. The bridge wheel and pinion are enclosed in a neat cast-iron box, and are so kept perfectly clean and out of harm's way. Price £10 10s.

Messrs. Johnson, of Chester, show a two-horse-power with intermediate motion, value £15, and a two-horse thrashing machine, price £20.

Messrs. Coleman, of Chelmsford, has a pretty good two-horse-power thrashing machine. Price £40.

Messrs. Hunt, of Halsted, show a cheap serviceable horse-works, for driving chaff-engine, bean-mill, &c. Price £9 10s.

Messrs. Dray and Co. exhibit a very good one-horse gear; but the price is so much higher than many we have already highly recommended, that it is not likely to meet with many purchasers amongst those who usually attend these meetings or read these reports.

Messrs. Hill and Smith show a horse-power work of a simple and efficient character, costing £12 12s.

Messrs. Wedlake and Dendy, of Hornchurch, exhibit a one-horse power spur-gear, the good workmanship, compactness, and price of which (£9 9s.) commend it sufficiently.

CORN-DRESSING MACHINES.

Here we first notice "new implements," of which there are four. Let us first notice Robert Impey's, of Glastonbury. A small roller is introduced at the bottom of the hopper, which prevents choking and spreads the corn evenly over the sieves. There is a good fall from the hopper to the sieves. The whole width of the machine is gained for the sieves, because the motion, instead of being from side to side (as is commonly the case), is in the opposite direction; there is therefore a riddle area of sixteen square feet. Remove these sieves, and you are accommodated with a blower. Beneath is a set of drawers, which catch dirt, seeds, hulks, &c., and prevent their being mixed with the clean corn. If it is required to separate hariff, the corn falls on an endless blanket-web, up which it works, passing under a roller, finally being delivered on the floor. We remarked, too, a feeding-lever at the command of the turner. We were excessively pleased with this machine, its modifications are so various, and yet all so simple that any labouring man can adjust it for any operation. Since the little American machine (Salmon's) of last year, we have seen nothing to equal it, and perhaps this excels that, because it is so easy to manage; but it is dearer. Salmon's was £10. This, with hariff apparatus, will be £15 10s.

W. Sawney, of Beverley, shows a machine to which is adapted much the same sort of cliver or hariff apparatus as we remarked in the last, which can be driven by the same handle and at the same time as the machine to which it is attached. This cliver apparatus, to affix to any dressing machine, costs alone £3 15s. In many counties it must prove a very valuable addition.

J. Eaton, of Kettering, shows a simple, effective implement. No matter how rough the stuff, twice through this machine and its elements will be nicely assorted. The riddles are remarkably good, and well arranged; the blasts are admirably devised; it acts as a blower at will; and in all is so simple, effective, and cheap, that we cannot but advise all who want an inexpensive, good machine, to buy it. Price £8 8s.

And now, having done with new implements, we come to Robert Boby's corn-dresser, which was "new" last year, and carried off a silver medal this. The peculiar excellence of it lies in the patented screen, which is composed of a quantity of wires, cramped together so as to be mathematically true. It is fitted with rollers, and worked backwards and forwards by means of a crank, upon an immoveable frame beneath, fitted with thin iron collars that just introduce themselves between each wire, and prevent all possibility of blocking. The corn has a longitudinal direction given to it, which completely deprives it of all thin kernels, and affords the means of obtaining a most faultless sample. Price £15. There is a screen especially for maltsters at £6. Both machines are very popular.

Messrs. Hornsby's dresser remains as it was. They wish rather to perfect their combined thrashing and dressing machine, than to draw attention to this, which must become extinct so soon as that is generally used. The price is £13 13s., and certainly it is a first-rate machine.

James Cornes shows a rather novel kind of dresser. The frame is of plain, unvarnished deal, and instead of a strap there is a chain running on a spike wheel: the handle is far too low. We could scarcely judge of its performance, since there was nothing with which to try it. Price £8.

Messrs. Burgess and Key show an improved dresser, by which a great amount of work may be done, and done well. It stands low, but the handle is raised to a convenient height: it separates seeds very nicely, and is comparatively cheap, costing £10.

Messrs. Garrett and Sons show their old principle, with but little improvement. These machines however give universal satisfaction. A very good one sells at £8 10s.

Of clover drawers there are several. We mention first Mr. Burrell's. There are some more perfect than this, but it seems to do a good stroke of work: upwards of 25 bushels of clover can be drawn in a day with it. Price £50.

Messrs. Holmes and Son, of Norwich, have a cheaper clover drawer, made suitable for steam-power. The machinery does not seem very simple, however: it is mounted on four wheels. Price £40.

The clover drawer exhibited by Messrs. Hunt and Co. appears to us to be best in this class. It consists of a hollow cone of cast iron, within which is driven, at a great velocity, a drum of the same form, by means of which the seed is drawn from the large to the small end, and in the process is cleared from the husk. A grooved roller carries the seed to the cylinder, worked by a strap from the drum spindle, and the quantity of cob admitted to the machine is easily regulated by a slide plate. A blower is attached to the small end of the cylinder; and the seed falling on a vibrating sieve, the sheen, &c., is blown off, and the former falls on to a jumping wire sieve of two different meshes, when the seed, husk, and cob are separated so nicely as to spare at least two dressing-machines. Price £38 complete.

CHAFF-CUTTERS.

All the exhibitors, nearly, have chaff-cutters; but many merely act as agents to the principal inventors, such as Richmond and Co., Cornes, Smith and Ashby, Ransomes and Sims, &c.

We were much struck with the admirable workmanship of Messrs. Richmond and Chandler's chaff-cutters, and their cheapness too. The work they do is very great, and this work is effected with less expenditure of power than other cutters require. This year we find introduced two pulleys, fast and loose, for throwing out of and into gear, when driven by steam. This is a decided improvement. To the large chaff-cutter two sets of rollers are added for feeding, by which the necessity for the feeder coming near is done away with. Accidents were constantly occurring therefrom. We cannot recommend too highly their machines: they vary in price from £4 10s. to £15 12s., and all are of superior workmanship.

Messrs. Smith and Ashby show five of their very capital machines, varying in price from £5 10s. to £13 10s. They are all fitted with a patent safety apparatus for preventing accidents. This consists of a lever to throw the rollers out of gear when starting the machine, and which will reverse the motion in an instant when it is at its full speed.

Mr. Cornes exhibits eight chaff-cutting machines, and keeps up his character for good workmanship and effective implements. They range from £2 15s. to £13. The lowest priced one is adapted for gentlemen's stables. They all get over an amazing amount of work. There is no improvement here; indeed, it seems that we can throughout this class only reiterate what we said last year. These chaff-cutters have arrived at such perfection that it appears impossible to advance any further. The safety movement, patented by Messrs. Smith and Ashby, seems to be very generally adopted in all machines that are driven by horse or steam power; and where this is not the case, the fast and loose pulley, not so safe a contrivance we think, stands in its place.

Messrs. Ransomes and Sims, as usual, exhibit seven or more very good implements; but no improvement about them is observable, and so on with others.

We must now conclude our report by a brief notice of the articles which more particularly attracted attention on the various stands.

Burgess and Key's American churns and digging forks are of first-class celebrity; and we were pleased with their "soil-testers"—little augers, something like large cheese-tasters, graduated in inches.

Biggs' sheep-dipping apparatus, in which the animals are placed in wicker baskets, and lowered into a vat by an iron crane, is very simple, and likely both to prevent the sickness of the workmen arising from repeated dipping, and to save expense in labour.

On Warner and Sons' stand we observed, among the cast-iron pumps, garden water-barrows, &c., a copper water-wheel, 4 feet in diameter, capable of pumping water to an altitude of 50 feet and more, with a fall of 5 feet of water, more complicated and expensive than the hydraulic ram, but wasting less water.

Geo. Wood and Son, of Chelmsford, exhibited a very excellent root-grater, having separate steel gouges fixed to a disc. It may be worked by a lad, and will reduce turnips or mangel into shreds at the rate of two bushels per minute. Price £4 5s.

Crosskill's hay-maker, with its contrivance for enabling the driver instantly to reverse the motion, his show of carts and waggons, and particularly the portable farm railway, and, we may also add, the bone-mills, flour-mills, and the Archimedean root-washer, were most worthy of regard on his stand.

Hornsby's drills, in great variety, with the India-rubber conducting tubes, rack-and-pinion fore-carriage steerage, tipping movement for maintaining the box level, and various other improvements, met our particular attention.

Fry, of Bristol, exhibits among other articles Bushe and Barter's root-grater, made double, with fly-wheel between the two hoppers: this is worked by girls in Ireland, and makes a fine product.

On Samuelson's stand we noticed many varieties of Gardner's famous turnip-cutter, the best now made, with an iron frame, double-acting cutting-cylinder, a contrivance for slicing the last piece, and slits in the end of the hopper, by which the dirt is removed, and not suffered to fall amongst the cut food. The machine for steam-power is very large, having 54 knives. We would also mention his root-pulper, which minces roots into very fine shreds, at the rate of half a bushel per minute; an improvement upon Cornes' chaff-cutter; a simple chaff-engine, of which nearly 900 were sold last season; a cake-breaker, having a remarkably easy and simple contrivance for adjusting the rollers to different distances; and a large collection of lawn-mowing machines, cutting from 8 to 30 inches wide.

Busby's carts are admirable for strength, lightness, durability, and excellent form and arrangement. A one-horse cart, invented by Mr. Rowley, is fixed and jointed with galvanized iron bolts, on a very simple plan, being exceedingly durable; and it is tilted either from behind or before. Busby's horse-hoes are justly in repute, commanding an immensely large sale.

John Cornes, of London, shows a strange-looking implement in the form of a stubble cart, with rake attached, intended to carry away as well as rake stubble together, after the fashion of the lawn mowers, which collect the grass they cut; but we think a horse rake and cart separate are much more expeditious. His "magic washing machine" offers to save a family almost a little fortune.

Griffiths and Co. exhibit an admirable apparatus for making cheese, cutting the curd, filtering off the whey, and pressing, which has received a silver medal. But as an extended description is promised by a correspondent in another part of our paper, we say no more of it here.

Tuxford and Sons, of Boston, exhibited, besides their portable and fixed steeple steam engines and thrashing machines, some sawing machinery which attracted considerable notice, particularly for the improved spring fence-plate, and the drawing-up apparatus, with tramway, rope and pulley, crank, &c.

On the stand of Williamson, of Kendal, we observed a turbine, or horizontal water-wheel, calculated to yield three-horse power with a fall of 30 feet and a supply of 90 cubic feet of water per minute; and in certain situations it presents great advantages over the cumbrous vertical wheel.

Dunlop, of Haddington, shows a horse collar, which, with an expanding roll and body, can fit any horse whose neck measures from 18 to 22 inches, and can be put on without passing it over the horse's head.

Among Messrs. Ransomes and Sims' implements we especially observed an improved wrought-iron scarifier with seven teeth, useful, strong, and cheap; a rack hay press, by which two men can readily compress two or three trusses of hay into the size of an ordinary truss; and a very ingenious and valuable self-acting hay rack, and other stable fittings, whereby all waste either of corn or provender is rendered impossible. The various mills are mounted upon strong and neat iron stands in place of wood.

This firm exhibited some beautiful and well-arranged machinery in motion, in which the power of a steam engine is communicated by intermediate universal motions and spindles to meal mills, oat bruisers, turnip, bean, and chaff cutters, and cake breakers—all portable, and the whole capable of being fixed anywhere by three men in a couple of hours.

George Pye, of Ipswich, showed specimens of flax and feeding cake, illustrating a new process of manufacture, for which he has been honoured with a silver medal. This being novel and highly important, we must say a word or two upon it. The flax straw, after the farmer has taken the seed, is passed through a machine, which yields a product of broken straw, consisting of fibre with small bits adhering, these coming afterwards into a most nutritious feeding stuff. It is then placed in a vat, holding six or seven tons; a pipe under a false bottom introduces a solution of Fuller's earth and water; this is gradually heated by steam, made to boil, then the solution escapes. The flax is next pressed with a great weight, again washed with the solution, again pressed, washed, &c., and at last pressed very hard, to expel the moisture. It is then steamed for four hours, and is a very fine product, with none of the loss which arises from scutching, and with a very small proportion of tow.

Smith and Ashby, of Stamford, exhibit their unrivalled hay maker, which has taken all the first-class prizes offered for this description of implement by the Royal Agricultural Societies of England, Ireland, and Scotland during the last ten years. We understand that no less than 1,500 have been sold in three years; and although the judges of the Paris show, after trying the hay-maker in a wheat or rye field, awarded this machine only a second prize, the French Emperor, Prince Jerome Bonaparte, and the principal agriculturists of France were purchasers. The horse rake shown by this firm possesses a great many excellencies, on which we have not space to dwell this year; and their horse-work, for simplicity, strength, and cheapness, is to be much commended.

Messrs. Barrett, Exall, and Andrewes, in addition to their engines and thrashing and chaff-cutting machines, showed a number of valuable oilcake breakers, corn-crushers, haymakers, hay-rakes, sowing-machines, one-horse carts, &c.; and their novel "endless-band saw" excited universal admiration. The band-saw passes round two rapidly-revolving riggers, which have gutta-percha rims upon their periphery, to hold the saw from slipping, and by their elasticity, we presume, compensate for the want of that property in the saw itself. The action is most beautiful, and almost any shaped cut may be made with the narrow saw; and there are several advantages which it possesses over the circular one.

Burrell, of Thetford, exhibited, beside his engines and thrashing machines, a furze-cutter and bruiser, in which the gorse is passed under a roller having a pressure of 3 to 5 tons upon it, and is so reduced to a pulp condition; a clover-shelling machine, saw-benches, hurdle-making machines, &c.; and (though not in the Catalogue) a model of an apparatus for burning bricks. The bricks in iron waggons are gradually conducted into the furnace, then as gradually cooled, and the heat which escapes from them is employed in drying the newly-made bricks before burning, the process somewhat resembling the baking of biscuits. One of these kilns is in operation near the Crystal Palace; and experience proves that, with coals at 20 shillings per ton, 20,000 bricks can be dried and burnt in a day, at a cost of one shilling per thousand, instead of seven or eight shillings, as by the common method.

Huckvale's turnip-thinner has been improved since last year, the axis of the revolving cutters being placed in an angular instead of longitudinal position; a couple of small wheels press down the soil on each side of the row of plants before the cutters, and a curved yoking-iron allows the horse to walk in the interval on either side of the ridge. This is now a most valuable implement.

Reeves showed a variety of liquid manure drills, both Chandler's and his own, in which the liquid, instead of being delivered by buckets, is kept mixed by stirrers, and flows out through apertures kept open by brushes.

Sparke, of Norwich, has a very good manure distributor, in which the manure, after leaving the barrel and scraper, falls through a chamber of wires, and it is calculated to sow any artificial manure broadcast, either moist or dry, from two bushels per acre upwards.

Garrett and Sons exhibit their engines, thrashing machines, chaff-cutter, &c., and their well-known and unsurpassed drills. Their root-pulper is very simple and efficient, consisting of a couple of rough rollers of different speeds, turned by a slow motion, beneath a Gardner's turnip-slicer. An improvement has been recently added to the combined liquid and dry manure drill of Messrs. Spooner and Chambers, consisting of revolving valves or boxes, of a wonderfully simple and ingenious construction, attached to the coulters, which deposit the manure and seed together as a "drop" drill.

Oxley, of Beverley, showed his patent cart-wheels, made by machinery. Very true, strong, and durable.

On Turner and Co.'s stand was a great assortment of mills for all purposes.

Mapplebeck and Lowe showed a very large number of implements and machines of all kinds.

Barnard and Bishop had an extensive stand of cast-iron troughs, wire fencing, turnip pulpers, &c.; and among these articles a hay-rack adapted for straw-yards, having a grating lying upon hay, and falling as it is consumed, thus preventing waste. Price 30s.

Bentall's ploughs, broadshares, harrows, and many other implements and machines formed a striking feature in the yard; and, indeed, his celebrated parer and cultivator stands yet unrivalled for effectiveness united to simplicity.

Coleman had a large show of turnip-cutters, corn-crushers, mills, weighing machines, pumps, &c., in addition to his scarifiers, clod-crushers, and thrashing machines.

Holmes, of Norwich, exhibited his steam-engines, thrashing-machines, drills, and clover-seed drawing machine.

Hunt's clover-seed drawer attracted considerable notice.

Lloyd and Sons, of Shoreditch, exhibited some excellent flour-mills and oat-bruisers.

Nicholson, of Newark, showed his admirable haymaking-machine, with some important improvements; a variety of implements, washing- machines, stoves, &c., also merited the attention which they received.

Smith, of Kettering, showed his simple, cheap, and excellent horse-hoes.

Thompson, of Lewes, exhibited, among many other articles, his Paris prize hay-maker, containing several improvements, but being objectionable, we think, for its double-pointed teeth.

Phillips, of Brandon, had a very extensive stand—the most noticeable articles being the root-pulper and the poppy-extirpator.

Smyth and Sons, of Peasenhall, had a very large number and variety of drills adapted for all purposes, and suited to the customs of all counties. These machines are remarkable for the simplicity of their working parts. The easy fore-carriage steerage gives great satisfaction; and in the manure drills we observed a very simple lever-slide for regulating the quantity sown, the slide extending the whole length of the box, and having a very pretty side-motion of the lever for locking it at various heights.

Dray and Co. showed a great diversity of agricultural machinery, chaff-cutters, mills, waggons, tools, &c.

On Bailey Denton's stand was a novel spud or hoe, designed not only to cut off the heads or tops of weeds, but to destroy the vitality of the root at the time of cutting, by discharging a liquid (poisonous to vegetation) on the wound.

On the stand of Gidney and Son, of Dereham, Norfolk, we noticed some sheep-hurdles on wheels, lawn-mowers, hoes, rakes, baskets, syringes, and a great variety of farm and garden requisites.

Millford, of Thorverton, Devon, showed some admirable carts and waggons, of a kind which we should be glad to see more generally extended throughout the country.

On Messrs. Howard's stand, besides the prize ploughs, harrows, and subsoilers already described, we more particularly noticed their improved horse-hoes, having two wheels on a swing-bar, by which any irregular motion of the horses does not affect the implement, and an expanding harrow, falling behind, brings weeds to the surface better than a revolving harrow. Their horse-rake has received an improvement in the lifting-bar being above instead of under the teeth, and it has also higher wheels.

We cannot too much praise Messrs. Thos. Gibbs and Co.'s collections of dried specimens of permanent grasses, of wheat, barley, oats, &c., and of seeds and roots. The dried specimens of ears of grain occupied 60 glass cases, 12 of which were foreign sorts. There were about 500 bowls of seeds and grains, and a great number of bags of grass seeds, &c., &c. It is remarkable that these samples, so beautifully and perfectly dressed, should be commercial samples, taken from the bulk as it is supplied to customers. What great pains must be employed by many different growers to obtain such quantities of innumerable varieties of grass seeds! and what a perfect method of sieving and cleaning is adopted for bringing the produce to this fine marketable condition!

Mr. B. Webster's model of farm-buildings met our attention: a uniform shedding, 18 feet wide, being employed as the most economical, and converted into buildings for any purpose.

Messrs. Lawson and Son, of Westminster, had a large show of roots, seeds, &c., some of the specimens and samples being remarkably fine.

We would add, that the department of the show-yard devoted to "roots, seeds, models, samples, &c.," always attracts a considerable share of attention and interest from the visitors; and it is well worthy of consideration whether prizes might not be judiciously offered for certain articles, specimens, or samples.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Monthly Council was held on Wednesday, the 6th of August—present, Lord Portman, Trustee, in the Chair, Lord Southampton, Sir Archibald Keppel Macdonald, Bart., Mr. Raymond Barker, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Milwood, Mr. Allen Ransome, Professor Simonds, Professor Way, and Mr. Wilson (of Stowlangtoft).

The Earl of Bradford, of Castle-Bromwich, Warwickshire, and Belgrave Square, London, was elected a Governor of the Society.

The following new members were elected :—

Andrews, George James, Dorchester, Dorset.
Baldwin, B. F., Wilnecote, Tamworth.
Barton, Rev. H. Noel, St. Ervan Rectory, Badstow.
Bowman, Fletcher, 3, Wood-street, Cheapside.
Chaston, James, Brundish Lodge, Framlingham.
Damen, Robert, Dorchester, Dorsetshire.
Denton, John Bailey, Stevenage, Herts.
Dugdale, Douglas, West Chaldon, Dorchester, Dorset.
Duke, Henry, Burleston, Dorchester, Dorset.
Gates, John, Grindle Hall, Shiffnal.
Graham, Alexander, Kirkhill, Stirling.
Hatherell, Isaac, Lye Grove, Chippenham.
Healey, Edward Charles, Sidmouth Lodge, Old Brompton.
Huyshe, Rev. John, Clysthydon Rectory, Collumpton.
Jobez, Charles, 47, Boulevard Madeleine, Paris.
Long, Charles, Saffron-Walden, Essex.
Martineau, Richard, Walsham-le-Willows, Suffolk.
Neve, George, Cranbrook, Kent.
Oddie, Walter, Colney House, St. Alban's.
Payne, Henry, Birdbrook, Halstead.
Peel, John, Middleton Hall, Fazeley, Staffordshire.
Plant, Thomas, Elworth Hall, Sandbach.
Ryder, Thos. Bromfield, 2, Elliott st., Clayton-sq., Liverpool.
Scott, John, Greenhead, Milnthorpe.
Smith, J. A., Bradford-Peveril, Dorchester, Dorset.
Standbridge, Thomas, The Hollier's Water, Oston.
Stephens, Robert, Ives Place, Maidenhead.
Talbot, Henry, Cockfield Hall, Sudbury.
Tett, John, Milton Abbey, Blandford.
Thornhill, William Capel Clarke, 39, Lowndes-square.
Wells, William, M.P., Redleaf, Penshurst.
White, Rev. John, Cherington Rectory, Bury-St.-Edmund's.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, reported that the current cash-balance in the hands of the Society's bankers in London was £2,781. He laid before the meeting the usual quarterly statements connected with the different branches of income and expenditure. He reported the recommendation of the Finance Committee that the best thanks of the Council should be given to Messrs. Sparrow, Round & Co., for the great courtesy and exactness with which they had acted as the local bankers of the Society during the period of the Chelmsford meeting. This recommendation was unanimously adopted by the Council.

House.—The report of the House Committee in reference to the repairs required in the Society's House, was read and adopted.

Reaping Machines and Steam Cultivator.—Reports having been read from the steward and judges at Chelmsford, the following decisions were made:—

"The Council authorise Sir Archibald Macdonald and Mr. Gibbs to direct the repairs of injuries caused by some accident since the Chelmsford Meeting to be made before the trial at Boxtead Lodge, in the reaping machine of Messrs. Burgess and Key. The application of Messrs. Dray and Co. to remove an impediment, caused by the alleged neglect of their workman, so as to enable their reaping machine to work as intended, to be acceded to, provided Mr. Amos is of opinion that it is not an alteration of the principal works of the machine rendered expedient in consequence of the trial at Chelmsford. That the days for the adjourned trial at Boxtead Lodge be the 13th and 14th of August. The Council consent to sanction the attendance of Mr. Amos, the Society's consulting engineer, to witness a private trial of Fowler's steam plough at such place as Mr. Amos may arrange. That the Council expect that the steam plough will be ready for work at Boxtead Lodge on the 13th of August, and that Mr. Amos, Mr. Caldwell, Mr. Gooch, Mr. Chalcraft, Mr. Sewell Read, and Mr. Huskinson be requested to attend. The Council cannot accept any report that may be founded on such trial as an award, but will take such further proceeding for future trial as, after receiving any report from Mr. Amos and the judges, may seem to be advisable. That Mr. Amos be authorised to adopt the dynamometer for the purpose of such trial."

It is understood that the trials on the first day, namely, on Wednesday, the 13th of August, will be *strictly private*, in order that the judges and consulting-engineer may have full and uninterrupted opportunity of testing the actual character of the machinery at work.

Protests and Recommendations.—Protests connected with the Chelmsford Meeting, and recommendations in reference to points connected with future country meetings were referred to the Stewards for respective reports.

Country Committee.—The general Country Committee for next year was duly appointed; Lord Portman being the chairman of it, and Mr. Cavendish the vice-chairman.

Communications from the Earl of Clarendon on the progress of the Polish cattle murrain and the German wool fairs were announced as referred to the Journal Committee; Prof. Way laid before the Council his analysis of the bat guano forwarded on a previous occasion from the Foreign Office; his Excellency Lord Cowley transmitted from France a work on the cultivation of Wheat; and Mr. Whiting, of Beaufort House, specimens of the new fish manure, manufactured by the London and West of Ireland Fishing and Fish-manure Company.

The Council having granted to the Secretary and the Clerks of the Society the usual vacations, adjourned over the autumn recess to the first Wednesday in November.

NORTH LINCOLNSHIRE AGRICUTURAL SOCIETY.

The county of Lincoln, as we have before had occasion to observe, has every element for the success of any agricultural meeting it may be determined to hold within its limits. It possesses some of the best farmers in the world; many of these being also, as is not invariably the case, amongst our most distinguished breeders of stock. This class have all the spirit and inclination to support such a gathering. The landlords of the county, too, are proverbial for their attention to a proper identity of interests between owner and occupier, readily associate themselves with the undertaking. Beyond these, however, Lincolnshire has even something more to command from her own store-houses. It is not alone the Yarboroughs, Chaplins, Heneages, and Stanhopes that can be counted on as patrons; not merely such a body as Torr of Aylesby, Smith of West Rasen, Brooks of Croxby, the Skipworths, Greetham, or the Kirkhams so well represent, who will give their active aid both as contributors and directors. There is another feature, now deservedly so important a one in the celebration of these anniversaries, which can be supplied in equal strength from the county itself. Naturally enough, perhaps, there is no district which numbers so many renowned makers of our agricultural implements. There are three or four such, well and widely known ere this, who have justly obtained for themselves the highest position in the great meetings of the three kingdoms. Such firms as need only be named to have their excellencies appreciated by the majority of our readers.

And not one of these now deigns to exhibit at the gatherings of his own county! They may certainly have some of their inventions at work in the show-ground; but they are specially declared to be "not entered for competition." That is to say, they entirely ignore the opinions of the Judges and the Society's Engineer. They will have nothing to do with them. A bad compliment this at best, and one which it behoves the friends of the Society at once to look into. There is no denying that this spirit of dissatisfaction has been increasing for some time past; and when we come to find a nearly unanimous resolve to draw back from the influence of an award, it is almost impossible to suppose but that there must be something wrong somewhere. The aim must be to discover where this is—we see plainly how injuriously it acts.

The same kind of feeling was very manifest at the Boston meeting last year. One thing is very certain, that until it be removed the Society cannot flourish or possess that weight it should do. If the implement makers have any real injury or abuse to denounce, let a committee be called to consider, either *directly or indirectly*, what there is to complain of. The latter—the Direction of the Society—must already know much of this by a side-wind; and even if no formal protest be entered, the very facts as they stand are quite sufficient to call for inquiry without any further delay whatever.

One thing is very certain, that henceforth all must come into the yard on equal terms. Exhibitors, in a word, must enter on those terms the Society directs; or if, indeed, any other course be suffered to become a precedent, the association will soon lose all its importance and authority, and sink into something little better than a bazaar or local advertisement. One gentleman declares that this show "will become second to none in the kingdom." To become so, however, it will be necessary to ensure a far greater amount of unanimity than appears at present to exist. To become amongst the best every man must do his best, and whether the breeder of a sheep or short-horn, the "maker" of a hunter, or the manufacturer of an implement, he must not fear the competition, or occasionally the triumph of a neighbour.

We impute direct wrong to no one. It would be false delicacy still to shut our eyes to the fact of there being something amiss. Let the committee look the difficulty boldly in the face; treat with it fairly but temperately; let all be prepared to concede a little, and the Lincolnshire Agricultural Society—with such a president as Lord Yarborough, and such supporters as those we have already referred to—may become the truly great and highly important Society it really should be.

The nineteenth anniversary of this now flourishing society took place at Market Rasen on Wednesday, July 30. Altogether there were nearly 5,000 people on the ground, which number was considerably augmented when the public were admitted gratuitously. The show took place in a most beautiful and capacious field belonging to John Morley, Esq., and occupied by Mr. George Rushforth. It was the most suitable site ever occupied by the society both for extent and accommodation. The entries in all the departments were not so numerous as they have been where the society's visits have been less frequent, but the quality has been an improvement upon former years. With respect to the show of brood mares for farming operations, the judges pronounced that the show was the best they had ever seen. In the classes for pigs there was not a large show, but the quality was of a very superior description, especially the sow that gained the first prize in class 32, the property of Mr. John Davy, of Owersby. In the class for sheep the number shown was somewhat meagre, but the general quality was very superior. In implements it appears that some misunderstanding has taken place between the principal manufacturers of this important branch of agriculture not to compete at these annual gatherings for prizes, and this has induced a new firm at Lincoln to send into the field of competition an engine manufactured for the *practical* use of the farmer. This firm is Messrs. Robey and Scott, of Lincoln, who have been rewarded for their enterprize by obtaining two £10 prizes. The following letter in relation to this subject was delivered in by the engineer:—

TO THE STEWARDS OF THE NORTH LINCOLNSHIRE AGRICULTURAL SOCIETY.

Market Rasen, July 30, 1856.

GENTLEMEN,—Under the peculiar circumstances connected with the show of implements at this meeting (the greater part being entered by the makers as not for competition), the duty devolves upon me to give you my opinion relative to the only portable steam-engine tested by the dynamometer. This engine is manufactured and exhibited by Messrs. Robey, Scott, and Co., of Lincoln, and worked to seven-horse power. I think the workmanship, strength, general arrangement, and working under trial creditable. The consumption of fuel is considerably more than that of engines manufactured especially for purposes of competition, but it is a question whether its performance would not equal the majority of engines sent out in the ordinary course of business. The manufacture and performance of the race-horse engine, however gratifying in its results, looked at scientifically, if attempted to be applied to farmers' use, with the expectation of similar results being attained in regular work, disappointment would surely follow; consumption of fuel should only be considered as one among many other points requisite to form a *really* serviceable and truly economical farmer's engine. Having offered these observations, I leave it to your judgment whether you may not, under the circumstances, give the prize of £10 to Messrs. Robey, Scott, and Co., and which I think you may fairly do.

I am, gentlemen, yours respectfully,

CHARLES JOHN CARR, Engineer, Belper.

The Dinner took place in a beautifully clean, extensive, and convenient malt kiln, the property of Messrs. Thorpe, which was most appropriately decorated for the occasion. In the absence of the Earl of Yarborough (through illness), the president of the society, the chair was taken by G. F. Heneage, Esq., M.P. for Lincoln, a vice-president of the society, who was supported on his right and left by Major Moore, high-sheriff of Lincolnshire; Sir Robert Sheffield, Bart.; Sir Charles John Henry Anderson, Bart the Hon A. L. Melville; the Rev. Mr. Gore, Withcall; A. Boucherett, Esq.; W. C. Norton, Esq., Mayor of Lincoln; F. Cooke, Esq., Mayor of Boston; W. G. Allison, Esq., Mayor of Louth; Major Amcotts; G. Skipworth, Esq., Moortown; G. M. Allington, Esq.; W. Hutton, Esq.; J. B. Stanhope, Esq., M.P.; Captain Maxwell; Rev. G. S. Scobell, vicar of Market Rasen; T. J. Dickson, Esq.; Capt. Sherston; Sir M. J. Cholmeley, Bart.; &c.; and amongst the general company we observed, Messrs. T. Greetham, John Hood, W. Ealand, T. Trotter, R. S. Harvey, L. Melville, W. Skipworth, South Kelsey; Rev. W. Smyth, Elkington; — Locock, Esq.; Rev. Mr. Philpott, Walesby; Mr. W. Emeris, Louth; Rev. A. Veitch, Tetney; Rev. Mr. Jarratt, Thoresway; Messrs. W. Torr, Aylesby; W. Smith, West Rasen; S. Gibbons, steward to Lord Yarborough; E. Davy, Hornby; T. Randell, Owersby; T. Brooks, Croxby; W. Dudding, Saxby; J. Iles, Binbrook; W. Graburn, Melton Ross; G. B. Child, Wykeham Hall; — Feltom, Brigg; C. Smith, Caistor; C. North, South Thoresby; G. C. Thorpe, Otby; R. Dudding, Panton; Rev. C. P. Barnett, Louth; Rev. G. J. Atkinson, Kettlethorpe; besides most of the principal agriculturists of the county, and many of the principal representatives of the trade and commerce of Market Rasen.

On the removal of the cloth, the CHAIRMAN gave the usual loyal toasts, which were received in that hearty manner for which the yeomany of England are so celebrated.

Sir M. J. CHOLMELEY gave "The health of the Right Hon. the Earl of Yarborough, the President of the Society," and the hon. Baronet read the following letter, respecting the noble Earl's absence from the meeting:—

"R.Y.S. Schooner, 'Zoe,' Plymouth, 26th July, 1856.

"Dear Mr. Hett,—Will you be so kind as to convey to the members of the North Lincolnshire Agricultural Society, either through the vice-president of the year, or by such means as you think best, my very best wishes for the continued success of the society, and tell them that I feel confident if they knew how much my health has benefitted by my cruize they would gladly excuse my absence from their meeting. You received the whip, I hope. Letters addressed to me, 17, Arlington-street, will reach me. I sail for Cork directly, thence to Orkney and Shetland, and hope to be in the county of Lincoln in the autumn and winter. Please send me an account of the meeting, which, with such an able vice-President, cannot fail to go off well.—Yours faithfully,

" John Hett, Esq." "YARBOROUGH.

Mr. HUTTON, in giving the healths of "the Representatives of the County," said Mr. Boucherett had compared the society with the Scotch, Irish, and Yorkshire societies, and had pronounced that if its field of operation were extended it would be second to no other society; but there was at this moment the great question of questions—the money. This society was in a flourishing condition, and had never been better in funds. He had never seen a larger number of people, and the stock had rarely (though it had been) surpassed. Never before had the society presented such prosperous aspects; and was North Lincolnshire coolly to take all these advantages of slow growth, and hand them over to South Lincolnshire without some *consideration*, and before it was ascertained that the South was willing to bring to the union its share of zeal and money? Let it be understood that if the South would find, as the North had done, in the person of Mr. Hett, a secretary who would work without fee or reward for years, and that the South was prepared to invest a sum equal to the capitalized income of this society, then the North would be willing to join the South, which would make it one of the best in England.

Mr. J. B. STANHOPE responded.

The Hon. A. L. Melville next gave, "Success to the North Lincolnshire Agricultural Society," and alluded to the fact that the premiums given, on the first establishment of this society, amounted only to some £120, whilst now they reached, including sums given by gentlemen, to £500.

Mr. G. Skipworth next gave "The Judges," to which Mr. C. Randell responded.

Mr. G. M. Alington, in proposing "The Town and Trade of Market Rasen," and "The Local Committee," congratulated them upon the success which they had attained. He also announced the gratifying fact that the local subscriptions alone had amounted, for this year, to the handsome sum of £116.

Mr. Towler acknowledged the toast, and

Mr. J. B. Stanhope next gave "The Chairman," who very briefly acknowledged the compliment.

SHORT-HORNED CATTLE.

Judges.—Charles Randell, Chadbury, near Evesham, Worcestershire.
Wm. Sanday, Holme Pierrepont, Notts.
Anthony Maynard, sen., Marton-le-Moor, Ripon.

For the best bull above one year old, £20, to Mr. Geo. Bland, Coleby Hall.

For the best bull, three years old or upwards, £6, to Mr. Wm. Torr, Aylesby; second, £3, to Mr. G. M. Alington, Swinhope.

For the best two years old bull, £6, to Messrs. Dudding and Thorpe, Otby.

For the best yearling bull £6, to Mr. Robert Smith, West Rasen; second, £3, to Mr. Wm. Torr, Aylesby.

For the best bull calf under a year old, £3 10s., to Mr. J. R. Kirkham, Audleby; second, £1 10s., to Mr. Wm. Torr, Aylesby.

For the best cow, more than four years old, having produced a calf at its natural time, within nine calendar months of the time of showing, £7, to Mr. Wm. Torr, Aylesby; second, £3, to ditto. Mr. G. F. Heneage, M.P., Hainton, two cows highly commended.

For the best heifer, three years old, having produced a calf at its natural time, within nine calendar months of the time of showing, £5, to Mr. Thomas Greetham, Stainfield; second, £3, Mr. J. R. Kirkham, Audleby. Mr. J. G. Dixon, Caistor, commended.

For the best two-year-old heifer, £5, to Mr. J. W. Bancroft, South Somercotes.

For the best one-year-old heifer, £5, to Mr. G. F. Heneage, M.P., Hainton.

For the best she-calf under one year old, £3, to Mr. Wm. Smith, West Rasen; second, £1, to ditto.

SHEEP.

Judges.—Mr. Shelley, Toynton, Spilsby.
N. C. Stone, Rowley Fields, Leicester.
Thomas Caswell, Quadring, Spalding.

For the best ram of any age, £10, to Mr. Chas. Clarke, Scopwick.

For the best shearling ram, £7, to Mr. W. Abraham, Barnetby-le-Wold; second, £4, ditto; third, £2, ditto.

For the best two-shear ram, £5, to Mr. W. Abraham, Barnetby-le-Wold; second £3, to Mr. C. Clarke, Scopwick.

For the best aged ram, £5, to Mr. Wm. Abraham, Barnetby-le-Wold; second, £3, to Mr. C. Clarke, Scopwick.

For the best pen of ten ewes, £6, to Mr. Henry Grantham, Sturton; second, £3, to Mr. David Hopkins, Cadney-cum-Housham.

For the best pen of ten shearling gimmers, £5, to Mr. William Abraham, Barnetby-le-Wold; second, £3, to Capt. H. V. Grantham, Sturton.

For the best pen of ten she-lambs, £4, to Mr. John Joseph Young, Claxby; second, £2, ditto.

HORSES.

Judges.—Thomas Robinson, Mulhill, near Hedon.
Wm. Atkinson, Barrowby, near Whitkirk, Leeds.
Thos. Clayton, Stainley House, near Ripley, Yorkshire.

For the best stallion for hunters, £10, to Mr. Pishey Smith, Boston.

For the best stallion for draught horses, £10, to Mr. William Marshall, Glentham.

For the best stallion for roadsters, £7, to Mr. Thomas Moore, Ashby.

For the best mare for breeding hunters, £7, to Mr. John Marris, Stainton-le-Vale; second, £3, ditto.

For the best mare for breeding draught horses, £7, to Mr. John H. Fisher, Orston; second, £3, to Mr. William Wells Cole, Newstead.

For the best mare for breeding roadsters, £5, to Mr. John Gothorpe, Linwood.

For the best hunting filly, two years old, £5, to Mr. W. J. Nicholson, Grimblethorpe.

For the best hunting filly, one year old, £3, to Mr. Thomas Lyall, Gayton Manor.

For the best cart filly, two years old, £5, to Mr. William, Wells, Cole, Newstead.

For the best cart filly, one year old, £3, to Mr. J. W. Richardson, Willoughton.

For the best cart foal, £2, to Mr. J. H. Fisher, Orston.

PIGS.

Judges.—[The same as for the Sheep.]

For the best boar, large breed, £4, to Mr. Charles Sheriff, Binbrook; second, £2, to Mr. John O'Hare, Market Rasen.

For the best boar, small breed, £4, to Mr. George Burwell, Thonock; second, £2, to Mr. Paul Kennington, Market Rasen.

For the best sow, large breed, £4, to Mr. Wm. Gentel, Torksey; second, £2, to Mr. John Daley, Gainsborough.

For the best sow, small breed, £4, to Mr. John Davy, Owersby; second £2, to Mr. George Burwell, Thonock.

For the best three breeding pigs of the same litter, not exceeding six months old, large breed, £3, to Mr. George Brumby, Hemswell.

For the best three breeding pigs of the same litter, not exceeding six months old, small breed, £3, to Mr. John Davy, Owersby.

EXTRA LIVE STOCK.

Mr. Coates Sharpley, Acthorpe, for a roan cow, 10s.; Mr. J. R. Dudding, Panton, for twenty young heifers, £3 3s.; ditto, fourteen ditto, £2 2s.; Mr. S. J. Welfit, Louth, for a bay stallion, £2; Mr. William Frankish, Great Limber, for a hackney mare, £1; Mr. T. M. Keyworth, Lincoln, for a black sow, 5s.

AGRICULTURAL IMPLEMENTS

Judges.—Thomas Outhwaite, Baynesse, Catterick, Yorkshire.
Wm. Hesseltine, Worlaby, Brigg.
David Martin, Wainfleet, Boston.

Engineer.—C. F. J. Carr, Belper.

For the best portable steam engine for agricultural purposes, £10, to Robey and Scott, Lincoln.

For the best portable thrashing machine, £10, to Robey and Scott, Lincoln.

For the best plough for light land, £3, to Thomas Lyall, Gayton Manor; second, £1, to Jarvis Watson, Barton-on-Humber.

For the best plough for heavy land, £3, to T. Ashley, Louth; second, £1, to Jarvis Watson, Barton-on-Humber.

For the best subsoil plough, £2, to Thomas Lyall, Gayton Manor.

For the best drag or cultivator, £2, to George Hunter, Ulceby.

For the best scarifier, or stubble-paring plough, £2, to Thos. Lyall, Gayton Manor.

For the best drill for general purposes, £4, to James Coultas, jun., Grantham.

For the best ridge drill, £2, to James Clark, Lincoln.

For the best liquid manure drill, £2, to J. Kemp, Thurlby Grange.

For the best horse hoe for corn, £2, to John Robinson, Wainfleet.

For the best horse-hoe for turnips, £1, to James Robinson, Rothwell.

For the best Grubber, £1, to William Torr, Aylesby.

For the best set of harrows, £3, to Thomas Lyall, Gayton Manor; second, £1, to Thomas Walker, Wootton.

For the best waggon for general purposes, £3, to W. Torr, Aylesby.

For the best two-horse cart, £2, to Thomas Butters, Goulceby.

For the best one-horse cart, £2 to George Tindall, Wickenby.

For the best clod-crusher, £2, to Thomas Walker, Wootton.

For the best roller for general purposes, £2, to Thomas Brooke, Market Rasen.

For the best dressing machine, £3, to Charles Revill, Lincoln.

For the best corn blower, £2, to Kynman and Rawlinson, Caistor.

For the best chaff cutter, £3, to T. Simpson, Lincoln.

For the best turnip cutter, £2, to ditto.

For the best cake breaker, £1, to T. Ashley, Louth.

For the best and most economical general mill for crushing agricultural produce, £2, to Mr. Thos. Simpson, Lincoln.

For the best and most economical steaming apparatus for general purposes, £2, to Mr. Thos. Simpson, Lincoln.

For the best pipe or tile machine, £4. No entry.

For other implements, not enumerated, to be disposed of at the discretion of the judges, £20:—£1 to Chas. Grantham, Fulstow; 15s. to T. F. Griffiths and Co., 68, Bradford-street, Birmingham; £1 10s. to James Hart and Son, Brigg; 5s. to Richardson Haynes, Ingoldmells; 5s. to German Jackson, Hibaldstowe; £1 10s. to T. Lyall, Gayton Manor; £1 10s. to Wm. Mitton, Lincoln; £1 10s. to Robey and Scott, Lincoln; 10s. to Thomas Simpson, Lincoln.

LONG WOOL.

Judge.—Thomas Clayton, Stainley House, near Ripley, Yorkshire.

For the best five fleeces of the wool of hogget sheep, £3, to William Abraham, Barnetby-le-Wold; second, £2, to Thos. Goulton, Croxby; Henry Grantham, Sturton, commended.

For the best five fleeces of the wool of ewe or wether sheep, £3, to Thomas Goulton, Croxby; second, £2, to William Abraham, Barnetby-le-Wold.

PREMIUMS OFFERED BY GENTLEMEN.

By the President.

For the best hunting gelding or filly, three years old, by a thorough-bred horse, a whip, value £5, to Mr. W. J. Nicholson, Grimblethorpe.

By Sir Edward Brackenbury.

For the gelding or mare best calculated to carry 18 stone as a hack, not exceeding 15 hands in height, a silver cup, value £5, to Mr. Richard Fox, Manton.

By G. F. Heneage, Esq., M.P.

For the best hunting foal, by a thorough-bred horse, £5, to Mr. John Morris, Stainton-le-Vale.

By J. B. Stanhope, Esq., M.P.

For the best four breeding cows, the property of one person, or partners, £5, to William Torr, Aylesby.

For the best pair of steers, above two and under three years old, £5, to J. B. Stanhope, Esq., M.P., Revesby.

For the best pair of draught horses, £5, to Mr. Richard Wright, Knaith.

By Thomas Chambers, Esq.

For the best foal by Tarquin, a silver cup, value £6 6s., to Mr. J. J. Young, Claxby.

ANNUAL MEETING AT COTTESMORE.

The 27th annual examination of the Allotments took place on the 5th and 6th Aug., and prizes were awarded by C. Stokes, Esq., Kingston-upon-Soar; W. Rudkin Morris, Esq., Luffenham; Wm. H. Barker, Esq., Cottesmore. The system of letting small allotments of land under rules and regulations for its management was established by Richard Westbrook Baker, Esq., of Cottesmore, in 1830, and has been nurtured and carried on by that gentleman with unabated zeal over a lengthened period, and perhaps with unexampled success. At the conclusion of the first day's business on the south side of the county, the judges and friends of the system were hospitably received by Mr. Burgess, of Ridlington Park. On the second day the business party were honoured with the company in their examination by the Earl and Countess of Gainsborough, the Viscount and Viscountess Campden, the Lady Victoria Noel and Lady Pakenham, the Hon. Gerard Noel, M.P., &c., when, after a most careful review of the Whitwell and Exton allotments (the latter number 66, and were taken out of the Park for the benefit of the labourers), the whole party were most kindly received and sumptuously entertained by the noble Earl and Countess at Exton Hall; after which the Barrow and Cottesmore allotments were examined, and, as usual, the meeting, which was a most satisfactory one, was brought to a conclusion by dining at Mr. Baker's, at which there were present the Judges, the High Sheriff (C. Morris, Esq.), the Viscount Campden, Hon. G. Noel, M.P., Hon. H. Noel, Hon. and Rev. A. G. Stuart, the Revs. Ellicot and Freeman, Messrs. Burgess, Wortley, &c. It was confidently stated that the whole of the allotments were never more promising for valuable crops; the wheat was good in all cases, and no disease discernible in the potatoes, and the cultivation was superior.

Uppingham Stamford Road Field.—First prize, 10s., to George Nutt; second ditto, 7s., to Thomas Dunmore; third ditto, 5s., to Walter Roberts. John Foster and Michael Cant, highly commended; John Coulson and Robert Stretton, commended.

Uppingham Church Field.—First prize, 10s., to Thos. Larratt; second ditto, 7s, to Henry Goodliffe; third ditto, 5s., to Tibbs Smith. Thomas Tyers, John Keightly, and John Hudson, highly commended; John Meyes, George Larratt, John Billsdon, Thos. Roberts, Robert Brown, and Edward Roberts, commended.

Uppingham Leicester Road Field.—First prize, 10s., to William Hudson; second ditto, 7s., to Wm. Richardson; third ditto, 5s., to Joseph Nutt. Geo. Crowden and William Scott, commended.

Ridlington New Allotments.—First prize, 10s., to Thos. Manton, jun.; second ditto, 7s., to Alice Bryan; third ditto, 5s., to George Webb.

Ridlington Old Allotments.—First prize, 10s., to Thos. Manton; second ditto, 7s., to John Dunmore; third ditto, 5s., to John Haines. Thomas Page commended.

Whitwell.—First prize, 10s., to John Bollands; second ditto, 7s., to Henry Hibbitt; third ditto, 5s., to John Woodward. Daniel Smith highly commended; Henry Smith commended.

Exton.—First prize, 10s., to Amos Hibbitt; second ditto, 7s., to John Bottomley; third ditto, 5s., Thomas Law and William Bullimore, equal. John Clements, Edward Hodgkin, James Bottomley, and John Royce, highly commended; Thos. Dawson, W. Hibbitt, Thos. Townsend, jun., John Martin, jun., Wm. Clements, Luke Hibbitt, Robt. Williams, John Phant, Wm. Martin, Thos. Dalby, and Wm. Dalby, commended. John Townsend and Wm. Smith disqualified by rule 4.

Barrow.—First prize, 10s. to George Kettle; second ditto, 7s., to Wm. Heatherland, jun.; third ditto, 5s., to Fras. Simons. Ed. W. Clarke and William Chamberlain highly commended; Henry Naylor and Geo. Smith commended.

Cottesmore New Allotments.—First prize, 10s., to Geo. Allett; second ditto, 7s., to Thos. Tyler; third ditto, 5s., to Amos Hibbitt. Fras. Burton highly commended.

Cottesmore Old Allotments.—First prize, 10s., to Robt. Watkin; second ditto, 7s. to William Cox, jun.; third ditto, 5s., to John Preston. Elizabeth Sharpe and Geo. Smith, highly commended; John Tyler commended.

Field with Field.—Awarded to Exton.

The Ransome prize of one sovereign for the best cultivated allotment in any of the fields, was awarded to Thos. Larratt, Church Field, Uppingham.

MANCHESTER AND LIVERPOOL AGRICULTURAL SOCIETY.

The annual show and dinner of this society took place on Thursday, Aug. 7, at Wigan. The meeting was perhaps the most successful ever held by the society. The total sum given in prizes amounted to £690, nearly one-half of which was locally raised.

The horned cattle comprised many very finely-bred animals, and the bulk of the stock was above the common average.

The tenant-farmer who showed the best bull of any breed, between two and three years, was Mr. Thomas Forrest, of Spurstow Hall, near Tarporley.

The horses were very numerous, and attracted very general attention. The judges, from the number and the quality of the animals, had great difficulty in getting through their task; and the landlord's prize, for a stallion for agricultural purposes, went to the Earl of Derby, who, with his "Briton," was the only competitor. His lordship also gained the prize with a brood mare (agricultural); and Mr. T. T. Parker, with his brood mare "Mistletoe," carried off the prize in the roadster or coaching class. Again the Earl of Derby carried off the prize for the best agricultural three-year gelding. In sheep, the best Southdown was shown by Mr. L. F. Lloyd, of Nannerch, Mold. Mr. L. F. Lloyd gained four other prizes for ewes and rams. The pigs, as usual, attracted a good deal of notice and criticism. The prize for the trial of reaping-machines was awarded to the machine of Messrs. Dray and Co., London. The display of implements, &c., was very large; and as many of the instruments were in work by steam-power, they attracted much notice. The ground was very much crowded during the afternoon. We heard it estimated that at one time there were from 10,000 to 15,000 persons present; and the amount taken for admission was nearly £370. At the dinner,

Mr. CARDWELL proposed "Success to the Manchester and Liverpool Agricultural Association." He congratulated them on the present as the most successful of all the society's anniversaries. Among the hills of Lancashire it was said that we met with cold and discouraging weather; but in this respect they had been fortunate, for better weather for the farmer was never experienced than it had been their privilege to enjoy. The receipts at the doors had amounted to no less than £366. (applause). The number of competitors for prizes—or rather, perhaps, entries—was 1,073, being no fewer than 420 more than on any former occasion; while the stock and implements were not behind those of any previous show (applause). There were some questions connected with agriculture which it had been his duty in former times particularly to attend to. One was the application of science and mechanical skill to the development of agricultural industry. Could they look around them in that district and forget that they lived in the county of Arkwright and Crompton? If it were not invidious, he might mention the names of living men who were engaged in developing mechanical art and science, not unworthy to be named in the same list with Arkwright and Crompton. It was within the memory of many members of the society that the greatest part of the manufacturing and commercial wealth of this great district had been created. When they now saw the same faculties applied by the same men to the kindred subject of agriculture, could they doubt that they were at the commencement of an era of agricultural improvement that should render the agriculture of England equally celebrated with the manufactures and the commercial enterprise of the country? He remembered the day of fallacies that were now not only exploded, but almost forgotten. He remembered when it was the prejudice that if we manufactured by steam, we deprived the poor man of the fair employment of his labour; when Lancashire was covered with those who destroyed the power-looms in order to revert to human industry; when human beings were harnessed like horses to the barges of the neighbourhood; and when it was stated that it would be an infringement of their vested rights if you substituted for their labour that of dumb cattle. That day had gone by, in commerce and agriculture; and now, with the reason God had given us, we subjected the powers of nature to our use, and made inanimate nature do that servile work which formerly man was obliged to perform, thus emancipating man for higher duties, and setting him at liberty for the great work of educating and fitting himself to stand in his turn at the command of new powers to be yet evoked. What Lancashire had been an example to the world of, in regard to commerce and manufacture, the present generation was seeing the beginning and the successful progress of with regard to agriculture. Year by year, he believed, we should witness the more laborious and servile processes delegated to steam and machinery, and man set free for higher and more important duties. (Applause.) He was anxious to invite their attention to another subject, usually known by the two long names, "agricultural statistics." Its simple meaning was the wide diffusion of knowledge as to which the tenant farmer was the person particularly and specially concerned. It was his interest to know at the close of the harvest what was its true state, in order that he might consider whether he ought to carry his newly garnered crop to the first market, or whether, from a right appreciation of the circumstances of the time, he should reserve its sale for a more favourable period. The merchants could obtain that knowledge. For that purpose the corn merchants of Liverpool had most elaborate arrangements, always making journeys through the country for the purpose of ascertaining first the prospects and then the state of the harvest. The tenant farmer had no such agency. He must be dependent upon some knowledge to be otherwise acquired. He told them emphatically that it was the interest of the tenant farmer, far more than any other person, to have such knowledge diffused. There were two opinions as to the way in which these agricultural statistics should be obtained—whether by a compulsory enactment, or by the voluntary aid of the tenant farmer. It was his privilege during the short time he held office to co-operate with the tenant farmers in a voluntary arrangement for the purpose of obtaining statistical information; and the result of that experiment, with regard to the shrewd, intelligent, and far-seeing tenant farmers of Scotland, was that, with an exception so small that it ought not to be called an exception, and he ought to speak of it without exception, there was, from one end of Scotland to the other, universal and unmixed success. By a voluntary co-operation of the tenant farmers, they knew the whole acreage of ground under every kind of crop, and the state of the crops prior to harvest; and at an early period after the harvest had been gathered in, an estimate was formed and published by the authority of Government, which by experience had been found to be reliable in regard to the quality and value of the crops. (Hear, hear, and applause.) In conclusion, he said we had arrived at a time when war was exchanged for peace, and when his gallant friend (the chairman) could turn his sword into a pruninghook, and leave the habits of a zealous soldier, to preside over an agricultural meeting. What was the future which we might reasonably expect for this great commercial community? With an abundant harvest, what was the development of industry we might not reasonably and prudently expect? He only hoped, as regarded trade, that it would be prudently and not intemperately pursued. They must observe its consequences to agriculture—look at the value of every acre of land and every hard-working man engaged in agriculture—and to the development and prosperity of commerce. With these feelings he cordially proposed the toast, "Success to the Manchester and Liverpool Agricultural Society" (applause). As townsmen or neighbours of Wigan, they took pride in believing that the society had no reason to regret its present visit to the town, and they need not be ashamed of the reception they had given it; and he was sure he only spoke their sentiments in wishing that every year of the society's future history might be one of progress (applause).

YORKSHIRE AGRICUTURAL SOCIETY.

MEETING AT ROTHERHAM.

Rotherham, noted for foundries and forges—once the Rotherwood in which the swineherds of Ivanhoe bred and fattened pork, and now the cattle market for Sheffield and the populous places round—is this year the scene of the Society's great annual gathering of fine animals and farm machinery.

The site of the show yard is an eminence commanding a beautiful prospect over many miles of rich country; and the two fields (of 12 acres) placed at the Society's disposal, by W. Owen, Esq., with two other separate plots for the entire horses, form the very best ground that could be desired. The arrangements, under Mr. Hannam, the able and zealous secretary, were most admirable; and the sheds for live stock were certainly the best we ever saw, having all boarded roofing; while the pens for sheep and pigs were constructed of board fencing, with gates or doors.

The Stewards of the Cattle Department were — A. Maynard, Esq., of Martin-le-Moor, Ripon; Heaton Clarke, Esq., of Ellingthorpe Hall, Boroughbridge; James White, Esq., of Moorgate, Rotherham; and John Forster, Esq., of New Hall, near Rotherham.

The Stewards of Implements were—John Almack, Esq., of Beverley; John Hall, Esq., of Kiveton Park; and Francis Moss, Jun., Esq., of Whiston, near Rotherham.

Steward of Poultry, &c.—W. Robinson, Esq., Rotherham.

Let us first say a word or two about the implement department, which far surpassed former shows both for the number of entries and the useful and first-class character of the machines and articles exhibited. There were 93 exhibitors, and the stands included upon them no less than 12 steam engines, 11 combined thrashing and dressing machines, 15 carts and waggons, 35 drills, 66 ploughs, 35 root slicers and pulpers, 30 chaff cutters, 75 mills, breakers, and crushers, and 418 other varieties of articles, such as churns, fencing, winnowing machines, horse rakes, hoes, haymakers, harrows, clod crushers, reapers, &c., &c.

We can only mention some of the more prominent objects in the yard.

Clayton, Shuttleworth, and Co., Lincoln, showed two portable and one fixed steam engine, the former having the cylinder in the smoke box to prevent radiation and economize fuel. Price of the eight-horse engine, £210. Two combined thrashing, shaking, and dressing machines, one with finishing apparatus. A new riddle of triangular wooden rods has been introduced; the bearings have been made wider, so as to wear longer, and all the bearings and wheels are outside the machine.

Whitworth and Eastwood, of Blackburn.—Compound action churns. These have a couple of vertical revolving dashers, will churn either milk or cream, and the forty-gallon churn will work with only two gallons if required.

W. Smith, of Kettering.—Improved and very simple and effectual-steerage horse hoe, and winnowing machine with divided blast.

Thos. Cuckson, of Worksop.—A steam engine and thrashing machine. A separating machine, chiefly intended for barley, consisting of a rotary cylinder screen, with cleaning brush above it, and a worm within which causes the grain to pass fourteen times round.

G. Malthouse, of Ripon.—A drill for sowing farmyard or artificial manure, in form like a small cart sloping backward, with a roller armed with fingers revolving behind, and scattering the manure down wide funnels.

Bradley and Craven, of Wakefield.—A brick moulding machine, in which a horizontal disc containing the moulds revolves beneath a pug mill, the bricks when formed being expelled from the moulds by moveable brass bottoms.

Bentall, of Heybridge, Essex.—Broadshares, one of which obtained three different prizes at Chelmsford, and another a prize of £5. Root pulpers, with which one man can rasp into very fine pulp half a bushel per minute.

Smith and Ashby, of Stamford.—Haymaking machine, excellent for its steadiness in working, impossibility of choking or clogging in any way, and simplicity of working parts. Steel-tooth horse rake, patent safety chaff cutters, and other machines which have taken many prizes.

J. Coulter, jun., of Grantham.—Drills, one of which obtained the head prize at Market Rasen. The manure drill has a very good contrivance for regulating the quantity sown.

W. Busby, of Newton-le-Willows, Bedale.—Noted ploughs, and first-rate carts, light, strong, and with very simple and convenient tipping apparatus. The cart invented by Mr. Rowley is constructed with galvanized iron, and is very durable.

Sandford and Owen, of Rotherham.—Kitchen and cottage ranges, the latter unprecedentedly cheap. Also stable fittings, in a temporary building for the purpose.

J. and W. Barker, of Dunnington, Yorkshire.—Large assortment of carts, winnowing machines, scarifiers, mills, ploughs, harrows, &c.

G. Hunter, of Ulceby, Hull.—Drills ; one with clever arrangement of roller, blades, and grating, for sowing farmyard manure.

R. Sorby and Son, Sheffield.—Great variety of scythes, knives, axes, and agricultural edge-tools.

T. F. Griffiths and Co., Birmingham.—Keevil's patent cheese-making apparatus ; a very simple, beautiful, and successful contrivance, for facilitating and economising the process of making cheese, 200 of which have been sold in nine months.

E. Archer, of London.—Washing machine, that will wash four shirts in four minutes, the linen being exposed in revolving boxes to the action of soap and water and air, price £2 5s. Also a patent churn, which will make and also gather the butter into two perfect rolls.

W. Sawney, of Beverley.—A very simple and excellent hariff or "cliver" flannel screen, to be attached at the foot of a common winnower.

Robey and Scott, of Lincoln—Portable steam-engine, and thrashing and dressing machine, presenting some new features in its arrangement and construction.

Hornsby and Son, of Grantham—Eight-horse portable engine, having the cylinder in the boiler to prevent radiation and condensation, price £255 ; thrashing, dressing, and finishing machines ; and drills of different kinds, including their unrivalled fore-carriage steerage.

E. and T. Humphries, of Pershore.—Their first-rate combined thrashing and dressing machine, having an improvement in the fixing of the perforated mahogany riddle-plates, to allow for their swelling or contraction.

James Hayes, of Elton, Hunts, straw elevator.

John Palmer, of Stockton-on-Tees.—A number of the prize ploughs of Ransomes and Sims, and Howard of Bedford ; "Union" reaping machine ; Chambers' beautiful manure-distributor, &c.

W. Dove, of York.—Chaff-cutter of Richmond and Chandler ; Samuelson's turnip-cutter ; ploughs, pumps, churns, &c.

Isaac Hartus, of Pickering.—A horse-power, in which the horse walks up an inclined endless railway—a sort of quadrupedal treadmill.

R. Coleman, of Chelmsford.—His first-class prize cultivator and parer.

J. Patterson, of Beverley.—Self-cleaning eccentric-action clod-crushers, and mills, both of stone and metal rollers, in which the axle of one roller is set inclined instead of parallel to that of the other, one roller periphery being slightly hollowed to fit the other : the resulting action is an effective rubbing as well as crushing.

Dray and Co., of London.—Reaping machine, with tipping platform, and other very important improvements.

Tuxford and Sons, of Boston.—Seven-horse portable steam engine, with vertical cylinder, enclosed in an iron house, price £225 ; combined thrashing, dressing, and finishing machine, remarkable for simplicity of working parts.

Thos. Luck, of Spalding, Lincolnshire.—An elevator and self-acting sacking and weighing apparatus, to be attached behind a common winnowing machine.

Sparke and Co., of Norwich.—Portable engine, and circular-saw bench, with self-acting drawing-up machinery.

A quantity of swedes and also of green globe turnips, grown by the secretary, attracted general notice, from their remarkable growth (having been sown on the 5th of May), and from their fine shape and very beautiful quality.

The show of live stock is admitted on all hands to be by far the best the society has ever had. In numbers, all the classes were well filled ; and the show of sheep was much larger than on any former occasion. There were no less than one hundred entries of shorthorns, nine of cattle of any breed, and nine of extra-stock cattle. In the Leicester and long-woolled classes there were fifty-five rams, twelve of them Cotswolds ; and sixteen pens of ewes and wethers. There were ten entries of Southdowns, and ten of other sheep ; and of extra-stock sheep there were thirty-two entries, twenty-five of them Cotswold. Of pigs there were sixty-eight entries ; of horses one hundred and seventy-seven entries, seventy of them being "for agricultural purposes." In the poultry classes were two hundred and twenty entries, one hundred and ninety-six of them fowls. Pigeons fifty-one entries ; rabbits, fifteen entries.

In the shorthorned classes, so many magnificent animals were shown that it may be safely said the society has never before collected under its stands such specimens of first-class excellence and quality ; and we have seldom witnessed such a show even at the Royal Agricultural Society's meetings. Among the exhibiters are the well-known names of Booth, Douglas, Wiley, Earl Fitzwilliam, Lord Feversham, Fawkes, Ambler, and Colonel Towneley, who exhibited no less than seventeen animals from his wonderful herd. As proof of the high value which this breed has attained to, we heard of 150, 200, and even 300 guineas each offered for bull-calves and yearling bulls.

We have not space to dwell upon the merits of individual beasts, but may just mention Mr. Ambler's prize bull "Grand Turk," as a remarkably good animal, of great size and substance, with great depth and breadth of chest, ribs exceedingly well thrown out, hips very wide, thighs and twist especially good. Mr. Fawkes's first prize yearling bull, "General Bosquet," is of great girth, very level and symmetrical. Mr. Bland's second prize yearling bull, "Lord Raglan," is a very well-formed animal, and we admired him much for his beautiful quality.

In class 3 we particularly admired Col. Towneley's bull calf "Sparrow Hawk ;" very handsome, with great depth and capacity of frame. Mr. Douglas's first prize bull calf is of beautiful quality, very level, with an exceedingly good chine, forequarter, and flank.

Some of the shorthorn cows are of wonderful size and width of frame, yet very symmetrical, and of fine quality. Col. Towneley's prize three-year-old cow "Roan Duchess" is remarkable for her level and wide back, and superior forequarter; and "Blanche," his first prize cow in class 4, is no less surprising for her magnificent proportions than for her beautiful quality.

In class 7 (yearling heifers), the prize heifers of Mr. Booth and Mr. Douglas were much superior to their competitors, Mr. Booth's "Queen of the May" being very beautiful indeed, and extraordinary both for chine, hip, and tut, as well as for a very good back and fine head. Col. Towneley's heifer calves attracted universal attention for their symmetry and beauty. Mr. Leonard Thompson's first prize ox is of tremendous size, and uncommonly well covered with beautiful meat; and Mr. Aylmer's second prize ox is a very superior beast. Among the fat cows, Mr. Booth's prize "Water Nymph" is surprizingly fat; and Mr. Armstrong's "Magdalene" is in our judgment not only of fine feeding quality, but a remarkably good animal in various points.

Among the dairy cows we noticed some which are giving an extraordinary quantity of milk; and in the extra stock class, Mr. Booth's prize cow "Bridesmaid" claimed the chief attention as a wonderful animal, both for her extraordinary quantity of meat and fineness of head and bone; while Col. Towneley's "Victorine" is a splendid specimen of his breed.

We must say that in some of the cattle classes the judges seem (in our opinion) to have let *feeding* rather than breeding influence their decision.

In the sheep classes, although the judges awarded their favours principally to the Leicesters, we were particularly struck with the magnificent size and character of some of the Cotswolds of Mr. Handy, Mr. Beale Brown, and Mr. Wells. Some of those shown in the extra stock class are of wonderful size for their age; indeed, we believe that the lamb-hogs, when first clipped, sometimes weigh as much as 28lbs. per quarter. Mr. Borton's Leicester shearlings are very symmetrical, and beautifully formed; as also are those of Mr. Wiley and Mr. Thomas Harman. Among the rams of any age, we admired Mr. Abraham's and Mr. Simpson's.

Mr. Beale Brown's shearling gimmers are certainly very extraordinary for size and fine proportions.

Mr. Foljambe's Southdowns are very superior sheep, the prize ram being of great size and breadth, and of beautiful form and fine quality. The West-downs were certainly not of sufficient merit for a prize. The Woodland or Penistone sheep, with their long narrow backs, white legs and faces, long tails, and large horns, attracted much notice; as did also the smaller Mountain sheep from North Yorkshire, with their black-speckled faces and legs.

The pig classes comprised some very superior animals. Earl Fitzwilliam's first-prize large-breed boar is of great length and depth; Mr. Wilkinson's second-prize sow measures no less than 9 feet 8 inches in length; and Mr. Wainman's first-prize sow is of beautiful quality of flesh. Mr. Mangles' small-breed boars are very well formed, and his sows are remarkable for their beauty and fine character.

HORSES—HUNTERS.

The classes 29, 33, 37, and 38, embraced some of the best blood, symmetry, frame, and action in the United Kingdom. Pottinger, No. 311, is a spendid horse, possessing those very qualifications for getting the best hunters, and Mr. Smith's horse by Muley Moloch is not far his inferior. Gobbo is a compactly-formed horse, with great strength and good action. The class 29 is a very superior one. No. 329, Mr. Little's horse, was sold for Australia for 180 guineas. In the gelding class we were much pleased with Mr. Toone's horse, as having a strong deep frame, with short back, thin neck, and good legs: shoulder we thought rather too steep and full for a galloper. The prize filly in class 38 is a beautiful animal, with first-class top, her legs very strong and wiry, but too thin below the knee. In the classes for coach-horses there were some very superior animals, Mr. Sargison's well-known horse, Emperor, bore the palm; Mr. Denby's Rawcliffe took the second place, no mean one amongst so good a lot. In the gelding class 39, Mr. Wells' bay colt stands first very properly, and in class 42, 2 yrs. old, he again takes the first place with a very useful colt. The mares-and-foals and fillies were very short in number, only three entries in the first, and one in the latter class. Mr. Smith's mare is a splendid coaching animal. Mr. Dodson's horse pleased us greatly: capital eye, mild head, fine top, full thighs, and good legs. The roadster classes, 31, 35, 40, comprised some remarkably fine animals, and were well sustained. The chestnut roan was much admired. In the mare-and-foal class we could not divine the prize qualification of the old mare, except her age. She has lasted a long time, but her legs have long been gone; knees very large; her age 23 years. Mr. Clarke's gelding is a very commendable horse; four fine legs, beautiful head, short back, and good action. The agricultural horse-classes were remarkably good. The stallion class comprised twenty-two entries; most of them of very superior merit. "Young Cornet," a very capital horse, bred by a lady (Mrs. Lamb), took the first prize. The mares and foals were exceedingly good and numerous—sixteen entries. Lord Fitzwilliam's mare was all right in frame and feature; very cleanly, with fine foal. Mr. Cox's is a capital mare; fine top, full shoulders, pleasant head, and fine eye, deeply ribbed, and fine quarters; legs good; foal finely grown. The gelding and filly class was very good—10 entries. The yearling class was not numerous, but very superior, and No. 433 was a beautiful animal, with excellent legs, and this prize was also taken by a lady—Miss Cass. The next class, 46, was for agricultural horses and mares in pairs. This attracted very great attention and interest. Thirty-two beautiful animals were shown, and it would require great space to enumerate a small part of their many surpassing qualities. We have seldom seen such a lot together. Mr. Turner showed six beautiful animals, Mr. Salter four.

We saw Mr. S.'s grey horse out; with all the qualities of a good cart horse, his action was equal to most hackneys. Mr. Lingard's pair, Lord Fitzwilliam's pair, and Mr. Warre's pair were greatly admired. The whole class was extremely good. In Classes 47 and 48 there were exhibited some very prime animals, the admiration of every visitor; perhaps owing to their immediate readiness for riding purposes. Mr. Hutchinson's horse has much sinew below knee, with long arms; he is a first-class horse, as is also Mr. Booth's handsome animal. There was a very good show in the extra class. We admired Mr. Bentley's horses much: 472 and 471 were beautiful creatures. We class the show of horses as one of the best, most useful, and most valuable, we have seen.

Respecting the poultry show, we would observe that as the birds at this time of year are in bad feather (and there was not a single pen in full plumage) it is impossible to compare them properly; and perhaps the prizes would have been very differently awarded had this not been the moulting season.

The "game" class was decidedly the worst; and we cannot help thinking, also, that the judges have made a mistake here.

The Cochin-Chinas were not particularly well represented, many of them being too long on the legs; indeed, the south and west of England is the chief Cochin country, and the prizes were not sufficiently handsome to draw exhibitors from very long distances. The silver-pencilled and silver-spangled Hamburgh, and also the black Spanish fowls, were exceedingly good. If we may pick out any birds for special notice, we commend Mr. Robinson's prize Dorking chickens, as being the best pen in the show; and also name Mr. Fowler's first and second prize Aylesbury ducks as magnificent.

AWARD OF PRIZES.

CATTLE.

Judges.—S. Croften, Esq., Holywell, Durham.
Thos. Parkinson, Esq., Hexgreave Park, Southwell, Notts.
J. Hunt, Esq., Wortley, Sheffield.

SHORT-HORNED CATTLE.

For the best bull of any age, £25, to Henry Ambler, Esq., of Watkinson Hall, Halifax; second best ditto, £10, to Lord Feversham, Duncombe-park, Helmsley.

For the best yearling bull, £20, to Mr. F. H. Fawkes, Farnley Hall, Otley; second best ditto, £10, to Mr. George Bland, Coleby Hall, Lincoln.

For the best bull calf upwards of five months old, £10, to Mr. J. Douglas, Athelstaneford; second best ditto, £3, to Mr. Q. Clarke, Bilton, York.

For the best cow of any age, in calf or in milk, £15. to Charles Towneley, Esq., of Towneley-park, Burnley; second best ditto, £5, to Mr. John Booth, Killerby, Catterick.

For the best three-year-old cow, in calf or milk, and having had a calf, £10, to Charles Towneley, Esq., Towneley-park, Burnley.

For the best two-year-old heifer, in calf, £10, to Charles Towneley, Esq., of Towneley-park, Burnley; second best ditto, £5, to Mr. James Douglas, Athelstaneford.

For the best yearling heifer, £10, to Mr. Richard Booth, Warlaby, Northallerton; second best ditto, £5, to Mr. James Douglas, Athelstaneford.

For the best heifer calf, upwards of five months old, £5, to Charles Towneley, Esq., Towneley-park, Burnley.

For the best fat ox, of any age, £10, to Mr. Leonard Thompson, Sheriff Hutton Park, York; second best ditto, £5, to H. Ambler, Esq., Watkinson Hall, Halifax.

For the best fat cow, of any age, £5, to Mr. Richard Booth, Warlaby, Northallerton.

CATTLE OF ANY BREED.

For the best cow for dairy purposes, £5, to Mr. William Stead, Owlerton, Sheffield; second best ditto, £2, Jonathan Camm, Farnsfield, Southwell.

EXTRA STOCK CATTLE.

First place, "Brideamaid," Mr. Richard Booth, Warlaby, Northallerton.

SHEEP AND PIGS.

Judges.—W. Heseltine, Esq., Warlaby House, Brigg, Lincolnshire.
W. Sanday, Esq., Holme Pierrepont, Nottingham.
J. K. Singleton, Esq., Givendale, Pocklington, Yorkshire.

LEICESTER OR LONG-WOOLLED SHEEP.

For the best shearling ram, £15, to Mr. John Borton, Barton House, Malton; second best ditto, £5, to Mr. S. Wiley, Brandsby, York.

For the best ram of any age, £15, to Mr. J. Borton, Barton House, Malton; second best ditto, £5, to Mr. S. Wiley, Brandsby, York.

For the best pen of five ewes, £5, to Mr. J. Simpson, Spofforth Park, Wetherby; second best ditto, £3, to Mr. W. Jordan, Low Caythorpe, Bridlington.

For the best pen of five shearling wethers, £5, to Mr. J. Smith, Risebro', Kirbymoorside.

For the best pen of five shearling gimmers, £10, to Mr. W. Abraham, Barnethy-le-Wold, Ulceby; second best ditto, £5, to Mr. T. B. Browne, Hampen, Andoversford.

SOUTHDOWN SHEEP.

For the best ram of any age, £10, to G. S. Foljambe, Esq., Osberton Hall, Worksop.

WEST-DOWN SHEEP.

For the best ram of any age, £10. Prize not awarded.

MOUNTAIN, WOODLAND, OR PENISTONE SHEEP.

For the best ram of any age, £3, to Mr. Adam Hawksworth, Upper Middop, Penistone.

For the best pen of five ewes, £3, to Mr. Adam Hawksworth, Upper Middop, Penistone.

For the best pen of five wethers, £3, to Mr. William Ferrand, Harden Grange, Bingley; second best ditto, £1, to Mr. William Ferrand, Harden Grange, Bingley.

PIGS.

For the best boar, large breed, £5, to Earl Fitzwilliam, Wentworth House, Rotherham; second best ditto, £2, to Mr. J. Smith, Normanby, Kirbymoorside.

For the best sow, large breed, in pig or milk, £5, to Mr. W. B. Wainman, Carhead, Cross Hills; second best ditto, £2, to Mr. J. Wilkinson, Roundhay, Leeds.

For the best boar, small breed, £5, to Mr. G. Mangles, Givendale, Ripon; second best ditto, £2, to Mr. G. Mangles, Givendale, Ripon.

For the best sow, small breed, in pig or milk, £5, to Mr. G. Mangles, Givendale, Ripon; second best ditto, £2, to Mr. G Mangles, Givendale, Ripon.

For the best sow of any breed, in pig or milk, not qualified to compete in classes 23 or 25, £5, to Earl Fitzwilliam, Wentworth House, Rotherham; second best ditto, £2, to Mr. J Palmer, Thorlby, Skipton.

For the best boar of any breed, not qualified to compete in classes 22 or 24, £5, to Mr. Michael Gavin, Woodhouse Carr, Leeds; second best ditto, £2, to Mr. Joshua Knowles, Tinsley, Rotherham.

For the best three store pigs, of any breed, and of the same litter, from four to nine months old, £5, to Mr. S. Wiley, Brandsby, York; second best ditto, £2, to J. Fullerton, Esq., Thrybergh Park, Rotherham.

EXTRA STOCK PIGS.

First best, "Queen of Diamonds," Mr. G. Mangles, Givendale, Ripon; second best, four pigs, Lieut.-Colonel Towneley, Towneley Park, Burnley.

HORSES.

JUDGES.—C. Garfitt, Esq., Tabley Hall, Knutsford.
Geo. Wood, Esq., South Dalton, Beverley.
Benj. Wilson, Esq., Browith, Thirsk.

Best stallion for hunters, £10, to J. Raper, Broughton, Northallerton; second do., £3, J. Smith, Marton Lodge, Bridlington.

Highly commended, J. Axe, Doncaster.

Best stallion for coach horse, £10, to J. Sergison, Holme Hayton; second do., £3, T. Denby, Rawcliffe, Selby.

Best stallion for roadsters, £10, to R. B. Ridsdale, Water Gate, Ripley; second do., £3, J. Lister, Addingham, Otley.

Best stallion for agricultural purposes, £10, to Mrs. Lumb, Whitley Upper, Huddersfield; second do., £3, W. Simpkin, jun., Burton Agnes, Bridlington.

Highly commended, S. Bulmer, Little Smeaton, Pontefract.

Best mare and foal for hunting, £5, to J. Booth, Killerby, Catterick; second do. (given by the inhabitants of Rotherham), £2, R. King, King's Darlton, Tuxford.

Best mare and foal for coaching, £5, J. Smith, Marton Lodge, Bridlington; second do. (given by the inhabitants of Rotherham), £2, A. Fullerton, Thrybergh Rectory, Rotherham.

Best roadster mare and foal, £5, to T. Wagstaff, Sheffield Park, Sheffield; second do. (given by the inhabitants of Rotherham), £2, Bentley and Shaw, Lockwood, Huddersfield.

Best mare and foal for agricultural purposes, £5, to Earl Fitzwilliam, Wentworth House, Rotherham; second do. (given by the inhabitants of Rotherham), £2, J. Cox, Goldthorpe, Tickhill.

Best three-year-old hunting gelding, £5, W. W. Toone, Lambrote Grange, Conisbro'.

Best three-year-old hunting filly, £5, J. Turner, Sickling Hall, Wetherby.

Best three-year-old coaching gelding, £5, J. Wells, Booth Ferry, Goole.

Best three-year-old hackney gelding or filly, £5, Q. Clarke, Bilton, York.

Best three-year-old gelding for agricultural purposes, £5, G. Gilberthorpe, Grange Mill Farm, Rotherham.

Best two-year-old coaching gelding, £5, J. Wells, Booth Ferry, Goole.

Best two-year-old agricultural gelding or filly, £5, J. and R. Bennett, Snaygill, Skipton.

Best yearling gelding or filly for agricultural purposes, £5, W. Proud, Old Thornville, Greenhammerton.

Best pair of horses, of either sex, for agricultural purposes, worked during the season (given by the inhabitants of Rotherham), £10, to T. W. Lingard, Braithwell, Rotherham; second do., £5, Earl Fitzwilliam, Wentworth House, Rotherham.

Highly commended, J. Warris, Kimberworth, Rotherham.

Best hackney gelding or mare, not less than four years old nor exceeding six, £5, W. S. Atkinson, Barrowby Hall, Leeds; second do. (given by the inhabitants of Rotherham), £2, F. Midgley, Settrington, Malton.

Best four-year-old hunter, gelding, or mare, £10, to J. Booth, Killerby, Catterick; second do., £5, Col. Mellish, Hodsock Priory, Worksop. (Both given by the inhabitants of Rotherham.)

EXTRA STOCK HORSES.

The society's first and second-class silver medals to R. J. Bentley, West House, Rotherham.

PRIZES FOR IMPLEMENTS.

[Towards the premiums given in this department, the inhabitants of Rotherham gave 16*l.*]

JUDGES.

Field Implements.—R. Kay, Esq., Darlington.
T. C. Johnson, Esq., Chevit, Wakefield.
Yard Implements.—W. Owen, Esq., Moorgate, Rotherham.
John Clarke, Esq., Long Sutton, Lincolnshire.
Geo. Legard, Esq., Easthorpe Hall, Malton.

Best plough, for ploughing 6 inches deep, 10*l.*, Mr. W. Busby, Newton-le-Willows, Bedale; second ditto, 5*l.*, Messrs. J. J. and W. Barker, Dunnington, York.

Best plough, for ploughing 9 inches deep, 5*l.*, Mr. W. Busby, Newton-le-Willows, Bedale, and also a second class silver medal for a turnip tailer; second ditto, 2*l.*, Mr. G. Maynell, Northallerton.

Best heavy harrows for three horses, 3*l.*, Mr. John Palmer, Stockton (Howard's).

Best light harrows for two horses, 3*l.*, Mr. John Palmer (Howard's).

Best reaping machine, 20*l.*, Mr. John Palmer.

Best single horse cart, 5*l.*, Mr. D. Harland, Osbaldwick, York.

Best portable thrashing machine, with dressing apparatus, to be driven by steam power, 20*l.*, Messrs. E. and T. Humphries, Pershore.

Best corn drill, 5*l.*, Messrs. Garrett & Son.

Best turnip drill on the flat, 5*l.*, Mr. James Coultas, jun., Grantham, and also 5*l.* for root pulper.

Best machine for distributing guano broadcast, 5*l.*, Mr. John Palmer (Chambers'), and also 1*l.* for tenants' scrubber, and 1*l.* for sheep hurdles, combining lightness, durability, and economy. Nicholson's dressing machine commended.

Best turnip cutter for sheep, 5*l*, Mr. Dove, York, and also 3*l.* for general collection of implements.

Best turnip cutter for cattle, 3*l.*, Mr. B. Stead, Barnsley.

Best portable turnip trough for sheep, 5*l.*, Mr. Thos. Scott, Broomclose, Ripon.

Best churn, combining simplicity and economy, 5*l.*, Mr. E. Archer, London.

Best farm house kitchen range, adapted for the requirements of a household of not less than fourteen in number, 5*l.*, Messrs. Sandford & Owen.

Best cottage kitchen range, 5*l.*, Messrs. Sandford & Owen.

Patent broadshare plough, highly commended, Mr. Bentall, Heybridge, Malton.

Patent cultivator, highly commended, Mr. R. Coleman, Chelmsford.

For patent clod crusher, 1*l.*, and first-class silver medal for mill for general purposes, Mr. J. Patterson, Beverley.

For corn elevator, first-class silver medal, Mr. Thos. Luck, Spalding.

For lawn mower, 1*l.*, Mr. T. Green, Leeds.

A twenty gallons patent compound acting churn, highly commended, Messrs. Whitworth, Blackburn.

An economical cottage stove and smoke burner, commended, Mr. Brown, Sheffield.

For pair of cart wheels, 2*l.*, Messrs. Oxley & Co., Beverley.

Six register stoves, highly commended, Messrs. Watson, Redmayne, & Co., Rotherham.

A combined thrashing machine, highly commended, Mr. T. Cuckson, Worksop.

For brick moulding machine, first-class silver medal, Messrs. Bradley & Craven, Wakefield.

For patent haymaking machine, 2*l.*, Messrs. Smith & Ashby, Stamford.

For general collection of implements, including forks, scythes, &c., 2*l.*, Messrs. R. Sowerby & Sons, Sheffield.

For Keevil's patent cheesemaking apparatus, 2*l.*, Messrs. T. and F. Griffiths & Co., Birmingham.

For winnowing machine, with shaking screen and new cliver apparatus, 1*l.*, Mr. W. Sawney, Beverley.

For improved Whitechapel cart, 1*l.*, Messrs. Puckering and Houlgate, Beverley.

For a variety of forks, 2*l.*, Messss. Spear and Jackson, Sheffield.

For cheap wire fencing, 1*l.*, Messrs. B. Greening & Co., Manchester.

For handmill, 3*l.*, Messrs. E. B. and F. Turner, Ipswich.

Turnip cutting machine, commended, Mr. Hartas, Pickering.

THE DINNER.

About 250 gentlemen dined in the Hall of the Mechanics' Institute, which had been tastefully decorated for the occasion, and the band of the 98th Regiment accompanied the toasts with music. H. S. Thompson, Esq., High Sheriff of Yorkshire, occupied the Chair, and J. W. Childers, Esq., the Vice-chair. Among the company were Lord Greenock, Captain Robertson, Lieutenants Shawe and Fisher, Mr. Price, Mr. Byne, the Hon. and Rev. W. Howard, the Mayor of Sheffield, the Master Cutler of Sheffield, &c.

After the usual loyal toasts, Mr. CHILDERS proposed the health of Mr. Thompson, the Chairman. He alluded to the absence of the Earl of Effingham, who was to have taken the chair; and paid a compliment to the chairman for the manner in which he had sustained the duties of the office which he had been so unexpectedly asked to perform. He added that no man was better fitted to occupy that position than Mr. Thompson, because of his connexion with and knowledge of agricultural pursuits, and also because of the friendship which he had manifested towards this society. (Cheers). To Mr. Thompson the success of this society was in a great measure owing, and what that success was the show which they had witnessed that day testified. (Applause). Of all the shows he (Mr. Childers) had ever witnessed he never knew one that was more thoroughly satisfactory. First of all, the situation was a splendid one; the preparations which had been made for the show were most admirable; and a finer show of Short-horns, sheep, pigs, and horses had never been witnessed. (Cheers).

The toast was drunk with great enthusiasm.

The CHAIRMAN returned thanks. He said he had been told that at agricultural dinners they were in the habit of making very stupid speeches—a sentiment which he could not altogether dissent from. Since the commencement of this show he had, however, heard one or two very stupid ideas propounded with regard to agriculture. The first was, that the present classification of animals was altogether wrong—that they ought to be classified according to their powers of producing guano. (Laughter). The second was one of more consequence, namely, that it was of importance at this time of the year to get the crops in quickly and well, and as cheaply as possible. This was combined in a new method of mechanics, namely, to abandon all the machines at once, take a metal rod, say a crowbar, drive it into the middle of a wheat field, attach one end to a bundle of copper wire with a galvanic battery, and turn on the steam just sufficient to singe the wheat, and the whole thing is done. (Loud laughter). They might so regulate the steam as just to burn the corn without setting it on fire. The chairman then alluded to the objects of such societies as these, namely, that they were calculated to bring together all the best ideas of practical farmers, and by an interchange of experience, to improve the condition of farming generally. He now had to propose the toast of the evening —"Success to the Yorkshire Agricultural Society." (Prolonged applause). This was the nineteenth annual meeting of the society. He was one of the original members of it. He might therefore say that he had a sort of paternal interest in it. He had watched its proceedings, and in contrasting its present state with its early days he found that it had done a great deal of good. In the absence of agricultural statistics, the only way in which they could arrive at an evidence of advance was to look back and compare its present landmarks with those of earlier days. He saw in the *Times*, on Saturday, an article headed "A Lincolnshire farmer's goods and chattels nearly 200 years ago;" and this article went on to state that the valuation of that farmer's stock and implements was worth £29 15s. (Hear, hear). That was sufficient to show the advance that had been made in agriculture. With regard to the Yorkshire Agricultural Society, it would be easy to show that it had made great progress since its first show was held. Take for instance the show of that day. A better collection of Short-horns was never shown together; the implements were altogether different to what they were 20 years ago, and the exhibitors much more numerous. The result of this improvement was seen in the cultivation of the crops. He was quite sure for himself, and had gained a clearer conviction from what was going on] around, that the agriculturists had arrived at great certainty in the cultivation of crops. It was true that they could not influence the seasons, but they could depend a great deal more upon inferior land than formerly; indeed they were not now so much dependent upon the quality of the land. However bad the season might be, the crops were less bad than they used to be, and in a good season they were infinitely better than they were twenty years ago. These were very great results, and spoke much for the advance of agriculture. He would not go much further into the subject, but there was one way of testing the improvement in the quality of the crops, which was this: he had been in the habit of having samples of different kinds of wheat brought to him from different fields, and of examining them to see the number of grains that each head contained. He believed that that was one of the best methods of ascertaining the yield of wheat. This year he found the crops generally much better than they were last year, and nearly totally free from that small grain which was seen last year. The heads were well filled, and though it was not a very large producing year, it would be found to be rather above the average yield of corn throughout the country. He concluded by giving "Success to the Yorkshire Agricultural Society," coupling with it "The Health of Mr. Hannam," their very intelligent and active secretary (loud applause).

Mr. HANNAM—(loud cheers): Mr. Chairman, vice-chairman, and gentlemen, when the Council informed me that they had chosen me to respond to this toast, I felt that they had imposed upon me a duty which, however agreeable to my feelings, was not much in unison with my abilities; but when I find our respected chairman coupling with it my name, and connecting with it my official duties, it becomes a personal question as well as a public one, and I feel that it has in truth deprived me of that means of expressing myself which I had otherwise relied upon having. I would say that, proud as I am of being a practical farmer, I am still more proud of being the representative of this society, and of my official connection with it. During the nineteen years that I have attended the meetings of this society, I can say that I have never returned home before learning some practical fact which I hope has been a benefit to me in my occupation. Judging, then, that all tenant farmers are equally capable with myself of turning the pleasure and instruction which they have afforded them on occasions like the present to great practical advantage, I say that I believe the Yorkshire Agricultural Society is entitled to the support not only of the farmers, but also of their neighbours in the manufacturing districts—to all that support which it has hitherto so handsomely received (loud cheers). Gentlemen, I might say, if its claims required to be set before you—that if you have looked around you to-day, you will have found evidence sufficient of the progress which has been made by this society in this district, owing to gentlemen connected with it. The meeting of this day has been graced with many of the jewels of agriculture—the "Necklaces" and the "Bracelets" of the north have decked it as well as the "Butterflies" of the south (cheers). I say that you may here have seen the noblest works of creation brought before you, and that you cannot look upon these things without feeling your knowledge increased and your taste elevated quite as much as they would be in looking on the works of the artist's pencil (cheers). There are in connection with this society many advantages to the surrounding districts. Here it has been brought into close connection with our manufacturing neighbours, and we can now feel ourselves brought together without imagining that the manufacturing interests are trespassing on the domains of agriculture (applause). We no longer imagine, when we see mechanical skill brought to bear on agriculture, that they are trenching on the domains of the wheelwright and blacksmith of the old era. That has been illustrated here to-day by many specimens. A better understanding has been come to with regard to the use of those implements; farmers have begun to find themselves benefited by the use of them; and, as the implement makers themselves will admit, they have been well patronised by the farmers, who, although they may be slow in adopting new methods and new implements, are constantly inquiring after the best means of forwarding the interests of agriculture. No one who has attended these meetings can fail to see the benefit which has arisen from the manufacturing and agricultural communities understanding each other's interests; and I cannot sit down without saying that it has given me great satisfaction to find that, although our meeting is held in a district that was considered very unfavourable for some descriptions of stock, a better show has not been seen (applause). I can say that never has a pleasanter duty been cast upon me than I have had in connexion with this meeting. I have rejoiced to see the good feeling that has existed between all classes of the neighbourhood; and my only regret is, that it should have fallen to one so incompetent as myself to respond to this toast (cheers).

Lord GREENOCK proposed, "Success to the Royal and other agricultural societies of England," and coupled with it the health of Mr. Hammond.

The toast was drunk with all honours.

Mr. HAMMOND said it was a pleasure to return thanks at a meeting of a sister, though younger, society. He had been highly delighted with the show of implements, for one reason—because there was less rubbish in it than he had ever witnessed in any show-yard; and he was quite certain that nothing would tend more to raise the feeling of respect on the part of the manufacturers for the farmers than the adoption of mechanical appliances. He concluded by thanking them for the honour they had done him.

Captain SHAW proposed the health of the Local Committee, coupling with his toast the health of Mr. Chambers (applause).

G. W. CHAMBERS, Esq., returned thanks.

J. DENT, Esq., proposed "The Judges;" to which

GEO. LEGARD, Esq., responded. He said he must call attention to one or two things. That which he would call the more popular branch of the exhibition was the live stock which had been shown that day. He had never before seen such a stock. And as to the other department, he had hardly ever seen so large a show of implements. It had been objected that great manufacturers were unwilling to come into competition with smaller ones. He hoped that was not so, because competition was the life-blood of societies of this kind; and when it ceased, the usefulness of such societies would be greatly diminished. They must not forget that competition was one of the primary rules of the society (applause).

The Hon. and Rev. W. HOWARD proposed the health of the agricultural labourers, contrasting their condition with that of the peasantry of France, Belgium, and Switzerland.

JOHN GREENWOOD, Esq., responded; and after a few other friendly toasts, the meeting separated.

DRIFFIELD AGRICULTURAL SOCIETY.

During the last week the East Riding of Yorkshire has been in a state of exhilarating commotion, by the repetition of a series of agricultural exhibitions, any one of which would do credit to the industrial enterprise and skill of any county in England. The first was at Bridlington, and was pronounced to be one of the most successful held there for the long period of twenty years. The second was at Market Weighton, including the districts of Selby and Tadcaster, and excited general surprise by the greatness of the quantity and the excellence of the quality of the stock shown. The third was at Driffield, on Friday, and for the immense number of people present, the superiority and extent of the stock, and the spirited manner in which the proceedings were conducted, completely eclipsed the two neighbouring shows. Much of the good feeling which prevails between the owners and occupiers of land in the East Riding of Yorkshire may be attributed to the frequency of these agricultural exhibitions, which serve to keep the agricultural mind in a state of competitive activity; and nothing can more strongly attest the growing prosperity of agriculture in England than the annual increase of these really splendid exhibitions.

The show at Driffield was all that could be wished: the weather was glorious, and the attendance very numerous. Seven thousand people were admitted to the ground, and nearly £300 was taken at the gate for admission. Nearly £400 was given in prizes. The show of shorthorns and yearling bulls was particularly noticeable as being exceedingly fine. Of sheep and horses a finer set never came together; and the judges had great difficulty in coming to a decision as to the merits of the different rams. There were nearly 400 horses on the ground, of the finest description: hunters were particularly good. There was also a good show of pigs. Poultry was a magnificent show, there being no less than 260 pens, including 23 game cocks. Implements were very numerous, of which there were 50 stands.

In consequence of the great success which has attended the application of artificial manures in the district, the samples exhibited excited a good deal of interest and discussion on the ground.

After the show a dinner took place in the Corn Exchange, which was handsomely decorated for the occasion with trophies and banners. Upwards of 200 gentlemen sat down to dinner. Lord Londesborough, the President of the Society, presided, having on his right Lord Hotham, Lord F. Conyngham, R.N., W. Whelan, Esq., from Kent; E. H. Reynard, Esq., the Rev. J. Blanchard, Major Arkwright, and T. W. Rivis, Esq.; and on his left, the Hon. Capt. Duncombe, M.P., H. Willoughby, Esq., J. Hall, Esq., J. Harrison, Esq., &c. Lord Londesborough's band was in attendance.

After dinner, the chairman in succession proposed the usual loyal toasts.

E. H. Reynard, Esq., in very eulogistic terms proposed "The Members of the East Riding"; for which Lord Hotham and Captain Duncombe returned thanks.

T. Dawson, Esq., proposed "The Landowners of the Riding." Though the East Riding of Yorkshire did not possess so many landlords as some counties, it had some of the largest and best of any county in the world (loud applause). It was the good feeling that existed between the landlords and tenants that produced such a gratifying state of things. They had been asked why they had no leases, and they replied that so long as such a feeling existed they required none (applause), for he thought that a good feeling between landlord and tenant was the best lease that could be given (Hear, hear).

Lord Londesborough rose to reply, and was received with rapturous applause. He was quite convinced that those gentlemen were aware of the duties of landlords to their tenants, and also of the very close tie that existed between them. As far as regarded leases, he would be extremely sorry to lose one single tenant of those who held land under him (cheers). Many of those around him had, he believed, the happiness of being married, and the connection between the landlord and tenant reminded him in some degree of that relationship between man and wife (cheers). He had himself, with respect to tenants, occasionally had difference of opinion with them (laughter); but he could say, and he believed every landlord around him would be ready to say the same of himself, that he had one of the best set of tenants in all England (loud cheers and laughter). He could say of them, and he was sure that every husband and every wife could say the same thing after any little differences they might have had—"Woe to the man who dared abuse either of them" (cheers and laughter).

J. Harrison, Esq., proposed "The Tenant Farmers"; which was responded to by Mr. Staveley in suitable terms.

Lord Londesborough then proposed "Success to the Driffield Agricultural Society." He had no doubt but every one had been able to appreciate the beauty of the stock shown that day, the magnificent cattle, the fine sheep, and those animals which might be called indigenous to this county—the magnificent horses (cheers). A paper had been put into his hands which spoke more forcibly of the prospects of the Society than he could do. It stated that 7,000 people had visited the show-yard, and that £293 had been received for admission (loud cheers). Much had been said of the advantage of increasing their stock; but was it nothing that 7,000 people should have met together for the purpose of enjoying themselves in peaceful harmony? If there was no other advantage connected with the Society, that would be one of the best means of prospering it (cheers).

Mr. T. Hopper responded to the toast.

Several other toasts were then proposed; after which—

Mr. J. Wheatley proposed "The Labourers"; and Mr. W. Angas replied. They both zealously impressed upon the landlords and large farmers the present unsatisfactory condition of the agricultural labourers, and the duty of making proper improvements in their dwellings and providing for the education of their children.

H. S. Bright, Esq., of Hull, then proposed "The Town and Trade of Driffield."

Mr. F. C. Matthews said it was with feelings of diffidence that he rose to return his heartfelt thanks for the manner in which they had received the last toast. Seventy years ago Driffield only consisted of mud and thatched cottages. Brick buildings were few and far between. They had now gotten a flourishing agricultural society; and the town had progressed, and was progressing, and was receiving the attention of noble and distinguished individuals, who were ever ready to lend their assistance. The town could boast of her wealthy bankers (laughter and cheers) and her distinguished tradesmen (cheers). They were proud to acknowledge that not much more than half a century ago the district consisted of barren sheep-walks and rabbit-warrens (cheers). But now by the energy of her Hoppers, her Jordans, her Staveleys, her Botterills, her Angasses, her Wheatleys, her Goffons, and her Harrisons (cheers), and many others whom he could name, the district had become a copy-book of farming to the United Kingdom. Agriculture had been the life-blood and sinews of Driffield; agriculture supported our gracious Queen on the throne, our nobles, our manufacturers, our commerce; agriculture supported our navy, our noble and gallant soldiers who fought our battles; agriculture supported the labouring classes; agriculture supported all towns, all trades, all nations (loud cheers). And therefore it was that, no matter whatever might be the topic, it was of the utmost importance that subjects connected with agriculture should be introduced for discussion—it mattered not whether at ordinaries or agricultural gatherings—for they contributed not only to scientific knowledge, but to increase the trade of the district (cheers). The trade of Driffield was never in a more flourishing state (cheers). He spoke feelingly; and it was with great pleasure that he responded to the "Town and Trade of Driffield," for he was deeply interested in its prosperity.

Mr. J. Harrison proposed "The Visitors."

Lord F. Conyngham responded, and concluded by proposing "The Ladies."

Mr. R. Botterill returned thanks.

The proceedings then terminated.

LIST OF PRIZES.

SHORT-HORNED CATTLE.

Judges.—Mr. J. Parkinson, Ley-fields, Newark.
Mr. J. Beetham, West Harlsey, Northallerton.
Mr. B. Swayfield, Pilsbury-grange, Ashbourne.

Bull of any age, £15, Mr. T. Barber, Sproatley; second, £5, Mr. W. Child, Easington.

Yearling bull, £5, Mr. W. Child, Easington; second, £3, Mr. J. Crust, Garton Field.

Bull calf under twelve months old, £3, Mr. J. B. Thompson, Anlaby.

Cow in calf or milk, £5, Mr. S. Wilson, Burton Pidsea; second, £3, Mr. F. Jordan, Eastburn.

Two-year-old heifer for breeding, £4, Mr. F. Ferguson, Walkington; second, £2, Mr. T. Dawson, Driffield.

Yearling heifer, £3, Mr. F. Jordan, Eastburn; second, £1, Mr. W. Wright, Sigglesthorne Hall.

Heifer calf under twelve months old, £2, Mr. J. R. Singleton, Givendale.

Fat ox of any age or breed, £2, Mr. J. Wheatley, Neswick.

Fat cow or heifer of any age or breed, £2, Mr. T. Dawson, Driffield.

EXTRA STOCK.

Roan bull, "Crusade," Messrs. Dawson and Hopper, a prize, but the amount not yet fixed.

SHEEP.

JUDGES.—Mr. J. Hopkinson, Manton, Worksop.
Mr. W. Sonley, Lund Court, Kirbymoorside.
Mr. Thomas Walker, Danes Hill, Retford.

Shearling ram, £10, Mr. W. Angas, Neswick; second, £5, Mr. J. Borton, Barton House, Malton.

Aged ram, £5, Mr. Borton, Barton House, Malton; second, £2, Mr. W. Angas, Neswick.

Pen of five shearling wethers, bred in the riding, £4, Mr. G. Walmsley, Rudston; second, £2, Mr. E. D. Conyers, Driffield.

Pen of five breeding ewes, £5, Mr. W. Jordan, Caythorpe; second, £2, Mr. J. Holliday, Owstwick.

Pen of five shearling gimmers, £4, Mr. S. Staveley, Tibthorpe Wold; second, £2, Mr. W. Angas, Neswick.

Fat wether, £2, Mr. Holtby, Emswell.

Fat ewe or gimmer, £2, Mr. W. Angas, Neswick.

SPECIAL PRIZES, by the Right Honourable Lord LONDESBOROUGH.

Owner of best pen of ten breeding ewes, having had lambs in 1856, £7, Mr. E. D. Conyers, Driffield; second, £3, Mr. G. Walmsley, Rudston.

Owner of the best four-year-old hunting mare or gelding, £10, Mr. J. Dalby, Corpslanding.

HORSES.

JUDGES.—Mr. G. Hunt, Preston, Lancashire.
Mr. W. E. Hobson, Kettleby Thorpe, Brigg.
Mr. H. Bowser, Faxfleet, Howden.

Stallion for hunters, £7, Mr. J. Smith, Marton Lodge, "Galaor"; second, £3, Messrs. Hepworth and Wilson, "The Era."

Stallion for coach horses, £7, Mr. Sergison, Holme, "Emperor"; second, £3, Mr. Holliday, Newland, "Napier."

Stallion for roadsters, £7, Mr. P. Ramsden, "Wildfire"; second, £3, Mr. P. Ramsden, "Phenomenon."

Stallion for agricultural purposes, £7, J. and W. Jackson, "Jack's Alive"; second, £3, Messrs. Ellerington, "Highland Chief."

Mare and foal for hunting, £5, Mr. H. Lambert, Wauldby.

Hunting mare or gelding, £5, Mr. J. B. Barkworth, Cottingham Castle.

Mare and foal for coaching, £5, Mr. R. L. Wilson, South Dalton.

Coaching mare without a foal, £3, Mr. Stephenson, Holmpton.

Roadster nag or mare, £5, Mr. G. Horsley, Huggate.

Roadster mare and foal, £5, Mr. W. Rickall, Warter Wold.

Mare and foal for agricultural purposes, £5, Mr. W. Angas, Neswick.

Three-year-old hunting gelding, £5, Mr. W. C. Harrison, Brandesburton; second, £2, Mr. Richard Stockdale, Skerne.

Two-year-old hunting gelding, £3, Mr. T. Hopper, Kelleythorpe.

Yearling hunting colt or filly, £2, Mr. B. Johnson, Frodingham Bridge.

Hunting filly under four years old, £4, Mr. T. Dawson, Driffield.

Coaching filly under four years old, £4, Mr. J. Metcalf, Burshill.

Three-year-old coaching gelding, £5, Mr. R. Stephenson, Wyton; second, £2, Mr. J. Johnson, Brigham.

Two-year-old coaching gelding, £3, Mr. T. Smith, Foston.

Yearling coaching colt or filly, £2, Mr. B. Johnson, Frodingham Bridge.

Three-year-old colt or filly for agricultural purposes, £5, Mr. J. Foster, Southburn.

Two-year-old colt or filly for agricultural purposes, £3, Mr. J. Foster, Southburn.

Yearling colt or filly for agricultural purposes, £2, Mr. Robert Hornby, Driffield.

Pair of horses of either sex, for agricultural purposes, regularly worked up to the time of showing, £5, Mr. F. Rounding, Kilnwick.

Lady's pony, under fourteen hands, £3, Miss Smith, Tickton.

Colt or filly, two years old and upwards, by "The Black Douglas," £4, Mr. F. Hotham, Bainton.

PIGS.

Boar, large breed, £2, Mr. J. F. Acey, Preston.

Sow, large breed, £2, Mr. Richard Anderson, Sherburn.

Boar, small breed, £2, Mr. E. Donkin, Birdsall.

Sow, small breed, £2, Mr. G. Ringrose, Flixton.

Store pig, the property of a labourer or working mechanic, £2, John Storry, Warter; second, £1, H. Gibson, Watton.

AGRICULTURAL IMPLEMENTS.

JUDGES.—Mr. T. Hooper, Mr. Wheatley, Mr. R. Fisher, Mr. H. Owston, Mr. R. Kirby, Mr. W. Topham, Mr. C. Hudson, and Mr. J. Smith.

Mr. F. C. Matthews, Driffield, manure drill, 10s.

Mr. Sawney, Beverley, winnowing machine, £1; ditto, pulping machine, 5s.; potato ditto, 5s.; chaff cutter, £1; scarifier, 10s.; weighing machine, 5s.

Messrs. Puckering and Houlgate, dog cart, £2.

Mr. T. Puckering, collection of implements, £3.

Mr. E. Gibson, press drill, 10s.

Messrs. Wilson and Son, Beverley, and Crosskill, Beverley, collection of implements, £5.

Mr. Patterson, Beverley, mill for agricultural purposes, &c., £2 10s.

Mr. Buxton, Malton, oat mill, £1.

Mr. Hewitt, Coninsbro', drag, 5s.

Mr. Pinkney, Burlington, horse rake, 5s.

Mr. Belt, West Lutton, iron harrow, scuffler, and plough, £1.

Mr. Jackson, Bridlington, patent stubble skim, 5s.

Mr. Teale, Holme, drag harrow, £1 10s.

Messrs. Hornsby and Son, Grantham, steam thrashing machine, £5.

Mr. Stones, Hull, fire engine, 5s.

Mr. S. Johnson, Driffield, portable corn mill, Cambridge roller and seed drill, and turnip drill, £2 10s.

Mr. Petch, Frodingham, improved hook of waggon pole, 10s.

Mr. Coultas, Rudston waggon, £1.

Messrs. Fowler and M'Collin, Hull, pan tile machine, 15s.

Mr. Dale, of Bridlington, collection, £1.

Messrs. Oxley and Co., Beverley, pair of wheels, 5s.

Mr. M'Connel, Beverley, cart, £1.

Mr. R. Levitt, Nafferton, pea skim, 5s.

Mr. W. Anfield, Driffield, corn mill, 10s.

Mr. Shepherdson, Tibthorpe, presser with drill, £1.

WHY THE DURHAM OR SHORTHORNED CATTLE STAND TRANSCENDENT IN ENGLAND.

SIR,—For many years it has been as great a rarity to see a longhorn, Hereford, or Devon cow, amongst the great milkmen in the metropolis, as it is to see a white crow in England. For a long time these great sellers of milk in London have preferred the large old kind of shorthorns, because they gave a greater quantity of milk than the longhorn, Devon, or Hereford. And as the above milkmen sell their milk by measure, they seldom purchase any but the shorthorned breed, and of the old kind, the pure-bred Durhams costing too much money, those bought being kept for their milk only, which is the cause of the common kind of shorthorned heifers and cows being worth more to the milk-sellers than many other kinds of cattle. The pure-bred, early-maturity Durhams stand preeminent in price. The superexcellent bull "Butterfly," being sold to a foreigner for 1,200 guineas, has astonished the breeders of all other kinds of cattle; and the breeder of the said bull having been offered 800 guineas for a cow and heifer to accompany "Butterfly" to his fresh home, is a stunner! Well may the Durham cattle be in the ascendant: but are we acting wisely by selling our best blood to foreigners? Let the breeders of English cattle take care the foreigners do not beat us with our own weapons, by putting the best instruments in their hands we have. The wise monarch, Napoleon III., will soon have the best of our cattle and sheep in all parts of France; and as the best of servants, alias bailiffs, &c., have their price, the French will soon have the best of our servants, as well as our cattle and sheep, to look after them; and we may expect, in a few years, if Napoleon lives, to see London greatly supplied with French-fed beef and mutton. It is very lucky for all those who have a herd of well-bred Durham cattle, I mean with a good pedigree: there will be plenty of foreigners to purchase them, at high prices, which will lead the English breeders to give more money for the best-bred shorthorns. SAMUEL ARNSBY.

18, *Norfolk-street, Hyde Park, Aug. 7th,* 1856.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

MEETING AT INVERNESS.

In another year or two "the Capital of the Highlands" will be much more accessible than it was during the celebration of the late Meeting. At present there is but one line of railway running into Inverness; and that, going in the direction of Aberdeen, breaks down after traversing some fourteen or fifteen miles, and leaves the traveller once more to try posting and coaching. However agreeable a change this may be to the man with one hat and a black bag, it is a means of transit scarcely equal to the demands of the present time, or more especially of the present season. Tourists, grouse-shooters, and fishermen joined accordingly with the agriculturist in the rush from the Huntley Station, every one in the first instance eager for the box of the mail or "The Defiance," though well content, after a few moments' experience, with a seat on the roof, behind, or even inside, so that he could get on "somehow." It may be taken as a maxim, that the success of any such occasion now greatly depends on the railway accommodation it can offer. Still, despite the general application of this rule, there may be yet exceptions; and Inverness was one of them. Notwithstanding the fifty miles of road-work, the fighting for places, the want of horses, and so forth, Inverness could have been well filled from the Aberdeen side alone. As it was, every other quarter contributed its due share, and the difficulty of getting into the town was only to be equalled by that of getting out again.

Under these circumstances many have questioned whether it would not have been better to postpone the visit of the Society for this "year or two." The event hardly justifies any such forebodings of failure. The Highland and Agricultural Society of Scotland, as its title in some degree implies, has long since extended its uses beyond that object for which it was originally established. The Highland, however, is still its own home, and the Meeting at Inverness—no doubt in a great measure from the causes we have intimated—was essentially a home-show. Scotland generally had of course her representatives; but farther than this, the stranger visitor or exhibitor met one only at long intervals. Such a limit at any rate afforded something of a satisfactory test, at the same time that it promised more encouragement to those from the immediate district who were bold enough to enter. In neither case was there anything to complain of. Inverness, agriculturally considered, is pronounced to have made extraordinary progress since the last gathering, held here some ten or twelve years since; while the prize-list will tell to those who know anything of the country, how many "a neebor laddie" has distinguished himself.

As an Agricultural Exhibition, that at Inverness, like most of the meetings of the Highland Society, depended almost entirely upon one especial department. The Southron, who at the shows not only of the Royal Agricultural Society, but of the West of England, the Yorkshire, and others, has been wont to find such interminable ranges of machinery and such exciting trials awaiting him, could scarcely help feeling disappointed with what he saw at Inverness. Even this is naturally an improvement, and by statistics a striking one, on what has been; but there is no denying that the presence of English makers was sadly missed. So far North, however, and with such doubtful accommodation in the way of carriage, they could scarcely have been expected. Neither Crosskill nor the Howards, who both did so much at Berwick, sent on. In fact, the only really important firm from the other side of the Tweed was that of Richmond and Chandler, strong as usual in straw and turnip-cutters, and carrying all before them. Yet further came Mr. Bigg, with his well-known sheep-dipping apparatus, duly supplied with a model Southdown ready for operation, and commanding immense attention. Of the implements supplied from nearer home, the entries of ploughs for all purposes were creditable, useful, and yet more promising; while in the general exhibition we may instance the firm of Messrs. Hernulewicz—a difficult name to ask for—who showed some gates, hurdles, and garden-chairs that well deserved the commendations they received. His self-shutting gate we remember to have seen before. If only equal to what it assumes to do, it ought to be popular; and certainly nothing can work easier. Amongst the other successful firms will be seen the Messrs. Young and Co., from Edinburgh; Gray, from Glasgow; Law, from Glasgow; Smith, from Glasgow; Sellar, from Huntly, and other good makers more immediately identified with the locality. Curiously enough, the famous Scotch farming does not, as with us, seem to require anything very renowned in the way of machinery.

Adopting a plan that other societies might well imitate, the Highland closes the business of the first day—that on which the dinner does *not* take place—with a discussion. When we state that the subject turned here on the breeding of shorthorns, we might well expect to see some strong illustration of it in the show-yard. The breed, in fact, is nearly or quite as much in deserved repute in Scotland as it is in either England or Ireland. In the immediate vicinity of Aberdeen, and *en route* for this meeting, is the farm of Mr. Cruickshank, of Sittyton, who has perhaps the largest herd of any breeder in the three kingdoms—above a hundred cows, all carefully selected, and, thanks to the perseverance of Mr. Strafford, every one with a herd-book pedigree. Mr. Cruickshank was a successful exhibitor at Inverness; though there was some doubt up to the last as to whether the boats with his stock would get in soon enough, in consequence of the fog—some we believe never reached the yard at all.

A name yet better known in the South from his success with the shorthorns is that of Mr. Douglas, of Athelstaneford. He was not, however, an exhibitor at this meeting. Indeed, his late experience in the show-yard has not been encouraging. His famous cow, "the Rose of Summer," so often a winner in England, Scotland, and Ireland, was condemned in Paris as being too fat for breeding purposes; while, to add to this discomfiture, she died within a week after her return home. As another instance of what this breed is now fetching, we may state that Mr. Douglas had recently refused nine hundred guineas for her.

Despite, however, these drawbacks, rough weather, or hard fortune, the display of shorthorns at Inverness was something more than respectable. Certainly it was one of the most uneven ever brought together; the excellence of many animals only forcing a stronger contrast with others placed beside them. The breeders or exhibitors, of some of the cows more particularly, have a good deal yet to learn as to the purity of a shorthorn, or they never could have entered the specimens they did. The first and second prize bulls met only the week previously at the local society's show in Aberdeen, where they reversed the positions they held here—Mr. Cruickshank's Baron, an Irish-bred beast, taking the first prize, and Mr. Harvey's the second. As Mr. Cruickshank is the breeder of the other bull, any disappointment to him in not again standing first must be considerably modified. The two were unquestionably, by far the best animals of the breed, and the point between them was thought either way to be a very nice one. Mr. Cruickshank's prize cow was another excellent representative of this herd; in fact, it was altogether a little too strong for other exhibitors who may not have gone so deeply into the pursuit. Notwithstanding the poor appearance of some of the cows, the picked animals were generally to be taken from the aged classes. Treated fairly as other kinds of stock, and not pampered for mere show, it is a question still, whether Scotland will develope the shorthorns as kindly as some more genial climates and generous soils. Many of the young animals looked stunted and small. The first-prize two-year-old, however, Mr. Willis's "Water King," bred in Yorkshire, found a purchaser at a hundred and fifty guineas, the buyer being his Grace the Duke of Richmond.

Passing down the line, we come next to the true character of a Scotch meeting—to the rough Highlanders, the sleek Polled Angus, and the ragged Ayrshires. Of these, the Polled Angus had a long way the preference; indeed, though but few in numbers, they had for general merit the call of the whole yard. There was not a bad beast amongst them; and Mr. M'Combie might himself furnish an exhibition. His first prize bull had all his Paris honours fresh upon him, and was deservedly something of "a lion." In the young bulls, though, there were some that will grow up to him; prized and unprized, we never remember in any breed with so few exhibited to have seen so many capital entries—such rare heads, broad chests, and well covered forms. It will be surprising if this sort does not come more into fashion with all of us, either for their own intrinsic merit, or their value for crossing. It is remarkable that the French "took to them" more than to any other breed, and it is very creditable to our neighbour's judgment that this should be recorded. The Highlanders, of which there was a numerous entry, strike us as always looking better at Birmingham or Smithfield than they do on their own ground. Two lean oxen, however, were sold here for £70 the pair; while, as far as the eye goes, they would promise yet better in "the yield" when mixed with some other kind. The Duke of Sutherland sent a couple of crosses with the Shorthorn, deservedly commended by the judges. We believe they could do no more than commend; but we may add, there is a strong feeling that the cross breeds should be made a somewhat more prominent feature in the shows of this Society than they are allowed to be at present. The Ayrshires generally were pronounced to be only indifferent. Their test, however, as we take it, is not in appearance, and the dairymaid rather than the butcher might prove the better judge of their worth.

The sheep show was altogether a good one. The Southdowns never came out so well in the North; both Jonas Webb's and the Duke of Richmond's flocks contributing to the entry. The leading man here, however, is Mr. Aitcheson, of Alderston, and his aged ram, especially, is a wonderful sheep. The breed does not seem to increase much in popularity in these quarters, but what were shown were nearly all commendable. A more favourite sort is the Leicester, of which the entry of aged rams was very strong. It may be some criterion of their excellence when we say that Mr. Collie's Paris prize sheep was "no where." He looked, to our judgment, but in indifferent trim, and was evidently none the better for his trip. Mr. Simson, who took so many of the prizes, has been long known as a breeder and successful exhibitor at his local shows, but he never previously occupied so high a position at the meetings of the Highland Society as he has this year reached. His perseverance is at length and deservedly reaping its reward. Of the Cheviots we believe we have seen a better lot—that at Berwick, for example. The Messrs. Brydon, however, were in great force; but the whole entry struck us as being hardly up to that useful character which has met us on former occasions. Mr. Brydon, of Kennelhead, was yet more successful with another of the native breed, the horned blackfaced. We have the word of one of the sheep judges for recording his pen of gimmers as about the best ever shown. Messrs. Macdonald and Blacklock also deserve mention for their entries; and the picturesque heads of some of their rams were things to covet. The whole effect, too, was well preserved, as the breeder, duly kilted and plaided, stood by the side of his favourite mountaineer.

Amongst the horses, the Clydesdales had it all their own way, there being very few of any other distinct breed exhibited. The only cross that would appear to be creeping in here is with the Cleveland. There were a few shown as such, and a few more, we fancy, without the fact being announced. The first prize horse and the first prize mare were both famous samples of the sort: for general preference we should have gone to the mares. Somehow or other, it does not do to judge a Clydesdale stallion reined up. To see him to advantage you must see him out, and then you can understand the value placed upon him. We were glad to find the Highland Society is extending this department beyond horses merely for agricultural purposes. There was an excellent class of Galloways and ponies, a few machiners, and at any rate one thorough-bred stallion parading up and down. We take it as a good omen.

If the merit of a breeding pig be that he cannot stand, and can scarcely breathe, then were the pigs present at Inverness of unimpeachable excellence. Our own opinion of this contradiction and absurdity is well known; let a very good local authority give his. It is thus the *Inverness Courier* expresses it:—"We suppose the pigs were pigs, though really some of them were such enormities that we doubt our assumption (and the narrative of the catalogue) on this point. They were hideously and uselessly fat; some of them had not got eyes that we could see, or that they could see with; and altogether we pass from a notice of them with pleasure. There is no more valuable animal than the pig: he is the poor man's friend, and has earned for himself an honest and important place in rural life in consequence; but overgrown to the condition in which he was displayed to-day, he takes away our respect and our taste for bacon at one glance. We understand from competent authority that the show of prize pigs was a good show; but we decline to add our own opinion of the general question, and leave our readers to make up theirs at their convenience."

There is a good deal of truth in this. If the only object be to have a fat pig, without reference to quality, or any desire to perpetuate the race, let us prepare them as is now done both in England and Scotland. Still, if either of the points we have mentioned be desirable, let us be as courageous as the Parisian, and at once order a breeding animal in a state not fit to breed from out of our sight. Somebody said, lately, this "over-feeding question" was settled. We only wish our experience could confirm it. Settled it is so far that in some quarters the abuse is quite as great as ever.

A small poultry show, a fancy fair, and a still more fancy ball, where Highland Lairds added yet to the splendour of that kilted costume in which they graced the yard of a morning, made up the attractions of the week. With these we must count the Society's dinner, on Thursday, well arranged and well supported. The national characteristics, of course, further prevailed here; and we could borrow but little from the progress of a very long toast-list that would be of much interest or import to the general reader of an agricultural journal. Certainly, the Honourable Mr. Howard, in returning thanks for the English Society, politely declared that "he had seen crops between the Tweed and the Ness, which surpassed anything he had left behind him in England." Colonel Adair, too, was grandly eloquent on Ireland, England, France, Scotland, and Balaklava; "turning," once more, "the sword into a ploughshare"—a highly popular metaphor which was encored by Mr. Cumming Bruce, who nearly contrived to create a diversion by an ill-advised introduction of "the parish school question" into his toast of "The Peasantry." Still, on the whole, nothing could have gone better; the Duke of Hamilton, as president, keeping the company well to the business before them, and allowing none of that lengthy hiatus so fatal to the success of a public dinner, or to a large meeting of any kind. His Grace introduced the concluding toast humorously and truthfully as the health of their "Home and Foreign Secretary," Mr. Hall Maxwell. The reception the company gave it can only further assure this gentleman that his many really arduous duties of late are properly appreciated by that body he represents—the Highland and Agricultural Society of Scotland.

PRIZES FOR CATTLE, &c.

SHORT-HORN.

Judges.—George A. Grey, Millfield Hill, Wooler.
Thomas Sadler, Norton Mains, Ratho.
Attending Member.—Alex. Henderson, younger, Stempster.

The best bull calved before January 1st, 1854, twenty sovereigns, to Arthur Harvey, Tillygreig, Aberdeen—the silver medal to Amos Cruickshank, Sittyton, Aberdeen, as the *breeder* of the best bull; the second best, ten sovereigns, to A. Cruickshank, Sittyton, Aberdeen; the third best, *the certificate of merit*, to Charles Lyall, Kincraig, Brechin.

The best bull calved after January 1st, 1854, fifteen sovereigns, to Thomas Willis, Manor House, Carperby, Bedale, Yorkshire; the second best, eight sovereigns, to A. Cruickshank; the third best, *the certificate of merit*, to John Mackessack, Balnaferry, Forres.

The best bull calved after January 1st, 1855, ten sovereigns, to William Todd, Elphinstone Tower, Tranent; the second best, five sovereigns, to Viscount Strathallan, Castle Strathallan, Auchterarder; the third best, *the certificate of merit*, to C. Smith and Co., Hillhead, Nairn.

The best cow of any age, ten sovereigns, to Amos Cruickshank; the second best, five sovereigns, to Alex. M. Collie, Carsewell, Alves; the third best, *the certificate of merit*, to John Mackessack, Balnaferry.

The best heifer, calved after January 1st, 1854, eight sovereigns, to A. Cruickshank; the second best, four sovereigns, to the Duke of Richmond, Gordon Castle, Fochabers; the third best, *the certificate of merit*, to the Viscount Strathallan.

The best heifer calved after January 1st, 1855, six sovereigns, to A. Cruickshank; the second best, three sovereigns, to James Geddes, Orbliston, Fochabers; the third best, *the certificate of merit*, to James Geddes.

HIGHLAND.

JUDGES.—John Cruickshank, Cloves, Elgin.
William M'Combie, Tillyfour, Aberdeen.
Attending Member.—John Lorne Stewart, Coll.

The best bull calved before January 1st, 1853, twenty sovereigns, to Theodore Macrae, Struy, Strathglass, Beauly; the second best, ten sovereigns, to the Right Hon. Duncan M'Neill, of Colonsay, Lord-Justice-General; the third best, *the certificate of merit*, to Robert Maclean, Gordon Hall, Kingussie.

For the best bull calved after January 1st, 1853, fifteen sovereigns, to the Right Hon. Duncan M'Neill; the second best, eight sovereigns, to Alex. Stewart, Dalvey, Grantown.

The best bull calved after January 1st, 1854, ten sovereigns, to John Gordon, Ballintomb, Grantown.

The best cow of any age, ten sovereigns, to the Duke of Sutherland, Dunrobin Mains, Golspie; the second best, five sovereigns, to Neill Malcolm, of Poltalloch, Lochgilphead; the third best, *the certificate of merit*, to the Duke of Sutherland.

The best heifer calved after January 1st, 1853, eight sovereigns, to the Right Hon. Duncan M'Neill; the second best, four sovereigns, to Neill Malcolm, of Poltalloch, Lochgilphead; the third best, *the certificate of merit*, to John Gordon, Ballintomb, Grantown.

The best heifer calved after January 1st, 1854, six sovereigns, to George and J. G. Smith, Minmore, Ballindalloch; the second best, three sovereigns, to Alexander Stewart; the third best, *the certificate of merit*, to the Duke of Leeds.

The best heifer calved after January 1st, 1855, four sovereigns, to Robert Anderson, Meikle Kildrummie, Nairn; the second best, two sovereigns, to Alexander Stewart; the third best, *the certificate of merit*, to Hugh Fraser, Abersky, Inverness.

POLLED.

JUDGES.—Alexander Bowie, Mains of Kelly, Arbroath.
James Geddes, Orbliston, Fochabers.
George Milne, Haddo, Methlic.
Attending Member.—Sir John Stuart Forbes, Bart., Pitsligo.

The best bull calved before January 1st, 1854, twenty sovereigns, to William M'Combie, Tillyfour, Aberdeen—the silver medal to Alexander Bowie, Mains of Kelly, Arbroath, as the *breeder* of the best bull; the second best, ten sovereigns, to G. Brown, Westerton, Fochabers; the third best, *the certificate of merit*, to Lord Lovat, Beaufort Castle, Beauly.

The best bull calved after January 1st, 1854, fifteen sovereigns, to the Earl of Southesk, Kinnaird Castle, Brechin; the second best, eight sovereigns, to John Dunbar, Holme House, Ardersier.

The best cow of any age, ten sovereigns, to William M'Combie; the second best, five sovereigns, to William M'Combie; the third best, *the certificate of merit*, to William M'Combie.

The best heifer calved after January 1st, 1854, eight sovereigns, to William M'Combie; the second best, four sovereigns, to the Earl of Southesk; the third best, *the certificate of merit*, to John Dunbar, Holme House, Ardersier.

The best heifer calved after January 1st, 1855, six sovereigns, to George Brown, Westerton, Fochabers; the second best, three sovereigns, to William M'Combie; the third best, *the certificate of merit*, to William M'Combie.

AYRSHIRE.

JUDGES.—John Baird, Lochwood, Coatbridge.
Patrick Graham, Barns of Limekilns, East Kilbride.
James Murdoch, Carntyne, Shettleston, Glasgow.
Attending Member.—Peter Drew, Carmyle.

The best bull of any age, ten sovereigns, to John Stewart, Burnside, Strathaven—the silver medal to John Barclay, Jawston, Kilbirnie, Ayrshire, as the *breeder* of the best bull; the second best, five sovereigns, to Duncan Grant, of Bught, Inverness; the third best, *the certificate of merit*, to Donald Robertson, Dalneich, Inverness.

The best cow of any age, in milk, eight sovereigns, to John Stewart; the second best, four sovereigns, to John Stewart; the third best, *the certificate of merit*, to John Dunbar, Holme House, Ardersier.

The best cow of any age, in calf, eight sovereigns, to John Stewart; the second best, four sovereigns, to John Stewart; the third best, *the certificate of merit*, to John Dunbar.

The best cow of any age, in calf, eight sovereigns, to John Stewart; the second best, four sovereigns, to Duncan Grant; the third best, *the certificate of merit*, to Peter Brown, Linkwood, Elgin.

The best heifer calved after January 1st, 1854, six sovereigns, to John Stewart; the second best, three sovereigns, to Eric Sutherland, Shrempston, Elgin; the third best, *the certificate of merit*, to Peter Brown.

EXTRA CATTLE.

JUDGES.—The same as for the Polled.

The Judges *commended*—Four Highland oxen, belonging to Thomas Low, Ballimore, Grantown—Two Highland oxen, Robert Anderson, Meikle Kildrummie, Nairn—Cross ox, belonging to the Duke of Sutherland; and another cross-bred ox, the property of the Duke, they *highly commended*.

HORSES.

FOR AGRICULTURAL PURPOSES.

JUDGES.—Capt. Falconar, Foxhall, Kirkliston.
John Gibson, Woolmet, Dalkeith.
Alexander Lawson, Old Mills, Elgin.
James Steedman, Boghall, Roslin.
John Maclaren, Monzie, Blair-Atholl.
Attending Members.—Colonel Houston and Major Horne.

The best stallion foaled before January 1st, 1853, twenty-five sovereigns, to Robert Wilson, Durn, Portsoy, and the silver medal as the *breeder* of the best stallion; the second best, twelve sovereigns, to John L. Gow, Raith, Kirkaldy; the third best, *the certificate of merit*, to George Booth, V.S., Dundee.

The best entire colt foaled after January 1st, 1853, fifteen sovereigns, to David Riddell, Killbowie, Duntochar, Dumbartonshire; the second best, seven sovereigns, to John Collie, Ardgay, Forres; the third best, *the certificate of merit*, to David Jack, Middle Drums, Brechin.

The best entire colt foaled after January 1st, 1854, eight sovereigns, to Robert Wilson, Durn, Portsoy; the second best, four sovereigns, to Robert Wilson; the third best, *the certificate of merit*, to John Fraser of Bunchrew, Inverness.

The best entire colt foaled after January 1st, 1855, six sovereigns, to John Cruickshank, Cloves, Elgin; the second best, three sovereigns, to John Mackintosh, Auchnacloich Cottage, Nairn; the third best, *the certificate of merit*, to C. Smith and Co., Hillhead, Nairn.

The best brood mare foaled before January 1st, 1853, fifteen sovereigns, to George Williamson, Auldtown, Turriff; the second best, seven sovereigns, to Archibald K. Leitch, Inchstelly, Alves; the third best, *the certificate of merit*, to John Cruickshank, Cloves, Elgin.

The best filly foaled after January 1st, 1853, eight sovereigns, to William Park, Boquhanran, Dalmuir, Dumbarton; the second best, four sovereigns, to A. Cruickshank, Sittyton; the third best, *the certificate of merit*, to John Mackessock, Balnaferry, Forres.

The best filly foaled after January 1st, 1854, six sovereigns, to David Riddell, Killbowie, Duntochar, Dumbartonshire; the second best, three sovereigns, to John Cruickshank, Cloves; the third best, *the certificate of merit*, to A. Cruickshank, Sittyton.

The best filly foaled after January 1st, 1855, four sovereigns, to James D. Grigor, Wester Alves, Elgin; the second best, two sovereigns, to Arch. K. Leitch, Inchstelly, Alves; the third best, *the certificate of merit*, to Arch. K. Leitch.

PONIES.

The best stallion not exceeding 14 hands, ten sovereigns, to Donald Macleod, Kingsburgh, Portree; the second best, five sovereigns, to Donald Macleod.

The best mare not exceeding 14 hands, eight sovereigns, to Andrew Oliver, Antfield, Inverness; the second best, four sovereigns, to George Cruickshank, Barnhill, Elgin; the third best, *the certificate of merit*, to Peter Brown, Linkwood.

EXTRA HORSES.

The Judges *commended*—Half-bred colt belonging to James

Cameron, Bainakyle, Munlochy—Two roadsters, George France, Wester Lovat, Bogroy—Colt and filly, George Johnson, Springfield, Forres—Half-bred Cleveland colt, Eneas Mackintosh, of Daviot, Inverness—Pony gelding, Thomas Low, Ballimore, Grantown—Pony stallion, Dudley Coutts Marjoribanks, of Guisachan, Cannich, Beauly—Pony gelding, S. M. Boulderson, Ord House, Beauly—and two pony geldings, belonging to Lord Lovat, Beaufort Castle, Beauly.

SHEEP.

LEICESTER.

JUDGES.—Arthur Harvey, Tillygreig, Aberdeen.
Geo Hope, Fenton Barns, Drem.
Attending Member.—William Forbes Mackenzie, Portmore.

The best tup not more than four shear, ten sovereigns, to Thomas Simson, Blainslie, Lauder; the second best, five sovereigns, to James Black, Knock, Keith; the third best, *the certificate of merit*, to Thomas Simson.

The best Dinmont or shearling tup, ten sovereigns, to Thomas Simson; the second best, five sovereigns, to W. Tod, Elphinstone Tower, Tranent; the third best, *the certificate of merit*, to John Collie, Ardgay, Forres.

The best pen of five ewes not more than four shear, six sovereigns, to John Collie; the second best, three sovereigns, to Thomas Mason, Pallinsburn, Northumberland; the third best, *the certificate of merit*, to J. Mackintosh, Auchnacloich Cottage, Nairn.

The best pen of five shearling ewes or gimmers, six sovereigns, to John Collie; the second best, three sovereigns, to Thomas Mason, Pallinsburn, Northumberland; the third best, *the certificate of merit*, to Thomas Mason, Pallinsburn, Northumberland.

CHEVIOT.

JUDGES.—Adam Blacklock, Minnygaff, Moffat.
John Collie, Ardgay, Forres.
John Hall, Sciberscross, Golspie.
Attending Member.—F. N. Menzies, Tirinie.

The best tup not more than four shear, ten sovereigns, to James Brydon, Moodlaw, Langholm; the second best, five sovereigns, to James Brydon, Moodlaw, Langholm; the third best, *the certificate of merit*, to James Brydon, Kinnelhead, Moffat.

The best Dinmont or shearling tup, ten sovereigns, to Donald Horne, of Langwell, Caithness; the second best, five sovereigns, to James Brydon, Kinnelhead, Moffat; the third best, *the certificate of merit*, to James Brydon, Moodlaw.

The best pen of five ewes not more than four shear, six sovereigns, to William Gunn, Glendhu, Lairg; the second best, three sovereigns, to Donald Horne, of Langwell, Caithness; the third best, *the certificate of merit*, to Sutherland Murray, Kirkton, Golspie.

The best pen of five shearling ewes or gimmers, six sovereigns, to James Brydon, Moodlaw; the second best, three sovereigns, to John Carruthers, Kirkhill, Moffat; the third best, *the certificate of merit*, to M. Gunn, Glendhu, Lairg.

BLACKFACED.

JUDGES.—John Maclaren, Monzie, Blair Atholl.
James Macpherson, Biallid, Kingussie.
Alexander Stewart, Dalvey, Grantown.
Attending Member: W. A. Campbell, Ormsary.

The best tup, not more than four shear, ten sovereigns, to Alexander Macdonald, Strathmashie, Laggan, Kingussie; the second best, five sovereigns, to Adam Blacklock, Minnygap, Moffat; the third best, *the certificate of merit*, to Charles Summers, Whitefield, Haydon Bridge, Northumberland.

The best Dinmont or shearling tup, ten sovereigns, to Adam Blacklock; the second best, five sovereigns, to ditto; the third best, *the certificate of merit*, to Alexander Macdonald.

The best pen of five ewes, not more than four shear, six sovereigns, to Alexander Macdonald; the second best, three sovereigns, to Hugh Andrew Johnston Munro, of Novar, Evanton.

The best pen of five shearling ewes or gimmers, six sovereigns, to James Brydon, Kennelhead; the second best, three sovereigns, to Chas. Alexander, Inversanan, Ardgour, Bonawe; the third best, *the certificate of merit*, to Alexander Macdonald.

SOUTHDOWN.

JUDGES.—Robert Jopp, Seggat, Auchterless.
George Williamson, Auldtoun of Carnousie, Turriff.
Attending Member: Robert Simpson, Cobairdy.

The best tup, not more than four shear, ten sovereigns, to James Aitchison, of Alderston, Haddington; the second best, five sovereigns, to the Duke of Richmond, Gordon Castle; the third best, *the certificate of merit*, to the Duke of Richmond.

The best Dinmont or shearling tup, ten sovereigns, to John Hutchison, Monyruy, Peterhead; the second best, five sovereigns, to John Hutchison; the third best, *the certificate of merit*, R. Scot Skirving, Campton, Haddington.

The best pen of five ewes, not more than four shear, six sovereigns, to Robert Scot Skirving; the second best, three sovereigns, to the Duke of Richmond; the third best, *the certificate of merit*, to Robert Scot Skirving.

The best pen of five shearling ewes or gimmers, six sovereigns, to John Hutchison; the second best, three sovereigns, to the Duke of Richmond; the third best, *the certificate of merit*, to Robert Scot Skirving.

LONG-WOOLLED OTHER THAN LEICESTER.

JUDGES.—The same as for Leicesters.

The best tup, not more than four shear, ten sovereigns, to the Duchess of Gordon, Huntly Lodge, Huntly; the second best, five sovereigns, to Robert Scot Skirving, Campton, Haddington; the third best, *the certificate of merit*, to Lord Kinnaird, Rossie Priory, Inchture.

EXTRA SHEEP.

JUDGES.—Arthur Harvey, Tillygreig, Aberdeen.
Robert Jopp, Seggat, Auchterless.
George Williamson, Auldtown of Carnousie, Turriff.

The Judges *highly commended* five Leicester lambs belonging to James Kemp, Kemptown, Forres. They *commended* a Southdown tup, belonging to William Tod, Elphinstone Tower, Tranent; and a cross-bred Southdown tup, of T. P. Bonell Biscoe, of Newton, Inverness.

PIGS.

JUDGES.—Sir James D. H. Elphinstone, Logie Elphinstone, Aberdeenshire.
John Maclaren, Rossie Priory, Inchture.
James Melvin, Bonnington, Ratho.
Attending Member: W. Gunn, Glendhu, Golspie.

The best boar, large breed, six sovereigns, to Robert Anderson, Meikle Kildrummie, Nairn; the second best, three sovereigns, to James Skinner, Woodside, Aberdeen; the third best, *the certificate of merit*, to John Macintyre, Culcharry, Cawdor, Nairn.

The best boar, small breed, six sovereigns, to George Brown, Westerton, Fochabers; the second best, three sovereigns, to John Mackessack, Balnaferry, Forres; the third best, *the certificate of merit*, to Sir Charles Ross of Balnagown, Bart., Parkhill.

The best sow, large breed, four sovereigns, to James Skinner; the second best, two sovereigns, to James Skinner.

The best sow, small breed, four sovereigns, to John Alderson, Thornby, Wigton, Cumberland; the second best, two sovereigns, to John Alderson; the third best, *the certificate of merit*, to John Gibson, Woolmet, Dalkeith.

The best pen of three pigs, not exceeding eight months old, four sovereigns, to John Alderson; the second best, two sovereigns, to John Cruickshank, Cloves; the third best, *the certificate of merit*, to James Skinner.

PRIZES FOR IMPLEMENTS.

JUDGES.—John Gibson, Woolmet, Dalkeith.
John Miller, Leithen, Polmont.
James Steedman, Boghall, Roslin.
John Maclaren, Rossie Priory.
Jas. Stirling, C.E., Edinburgh.
Attending Member.—Captain Falconar, Foxhall, Kirkliston.

The best two-horse plough for general purposes, three sovereigns, to George Sellar and Son, Huntly. Robert Law, Shettleston, and George Sellar and Son, also *commended*.

The best trench or deep-furrow plough, three sovereigns, to George Sellar and Son.

The best subsoil plough for two horses, four sovereigns, to

James Kirkwood, Tranent Foundry, East Lothian. John Gray and Co, Uddingston, Glasgow, *commended.*

The best subsoil plough for moor and stony land, for three or four horses, four sovereigns, to John Gray and Co.

The best double mould board plough for forming drills, three sovereigns, to George Sellar and Son.

The best improvement on, or substitute for, the common plough, in lifting potatoes, three sovereigns, to Robert Law.

The best two-horse grubber or cultivator, four sovereigns, to John Gray and Co.

The best drill grubber for green crops, two sovereigns, to James Kirkwood, Tranent.

The best Norwegian harrow, four sovereigns, to James Kirkwood.

The best consolidating land roller. *No award.*

The best land presser, for preparing seed bed for grain, five sovereigns, to Young, Peddie, and Co., Edinburgh and Glasgow.

The best ribbing machine, two sovereigns, to James Kirkwood.

The best pulverising land roller, five sovereigns, to James Suttie, Inchture.

The best harrows for heavy land, three sovereigns, to John Gray and Co.

The best harrows for light land, three sovereigns, to Robert Law.

The best common swing trees or draught bars, one sovereign, to Alexander and George H. Slight, Edinburgh.

The best equalising swing trees or draught bars, one sovereign, to Robert Law.

The best broadcast sowing machine for grain and grass seeds, six sovereigns, to Robert Law.

The best drill sowing machine for grain, six sovereigns, to James Smith, Lawhill, Auchterarder.

The best horse hoe for drilled grain crops. *No award.*

The best sowing machine for turnips, four sovereigns, to John Gray and Co.

The best sowing machine for turnips with manure. *No award.*

The best one-row bean sowing machine. *No award.*

The best liquid manure pump, two sovereigns, to Smith, Brothers, and Co., Kinning-street, Glasgow.

The best straw cutter for hand labour, two sovereigns, to Richmond and Chandler, Salford, Manchester.

The best straw cutter for power, three sovereigns, to Richmond and Chandler.

The best turnip cutter for sheep, two sovereigns, to Richmond and Chandler, Salford.

The best turnip cutter for cattle. *No award.*

The best turnip cutter for sheep, adapted for attachment to a cart, three sovereigns, to Caldow and Mackennel, Palmerston Iron Works, Dumfries.

The best linseed bruiser for hand labour, two sovereigns, to Richmond and Chandler.

The best grain and linseed bruiser for power, four sovereigns, to Richmond and Chandler.

The best root washer, two sovereigns, to Richmond and Chandler.

The best steaming apparatus for preparing food, five sovereigns, to Smith, Brothers, and Co.

The best set of troughs for feeding byres. *No award.*

The best sheep fodder rack, two sovereigns, to James Kirkwood.

The best one-horse farm cart, four sovereigns, to Robert Law. Peter Davidson, Broom, Auchterarder, and Robert Fraser, Forres, *commended.*

The best stone or iron stack pillars, with framework, two sovereigns, to Young, Peddie, and Co. Hernulewicz, Main, and Co., Glasgow, *commended.*

The best horse stubble or hay rake, two sovereigns, to James Kirkwood.

The best scythe for general purposes, one sovereign, to James Smith. Wm. Hanton, Drunkendub, Chance Inn, *commended.*

The best improvement on any part of the thrashing machine. *No award.*

The best thrashing machine, adapted for one or more horses, six sovereigns, to John Gray and Co.

The best hummeller, for attachment to a thrashing machine. *No award.*

The best dressing fanners, four sovereigns, to George Clark, Forres.

The best weighing machine for the barn, indicating measure and weight of grain at one operation, four sovereigns, to Smith, Brothers, and Co.

The best weighing machine, indicating from 1 lb. to 2 tons, four sovereigns, to Smith, Brothers, and Co.

The best churn worked by hand, two sovereigns, to John Gray and Co.

The best churn worked by power, three sovereigns, to Philip Hunter, Edinburgh.

The best cheese press, two sovereigns, to Thomas J. L. Brooke, Mere Kuntsford, Cheshire.

The best curd cutter for dairy purposes, one sovereign, to James Smith.

The best general set of the smaller utensils of the dairy, one sovereign, to Philip Hunter.

The best field gate, constructed entirely of iron, one sovereign, to Hernulewicz, Main, and Co., Glasgow, Belfast, and London; and another belonging to Hernulewicz, Main, and Co., Glasgow, *commended.*

The best field gate, not constructed entirely of iron. *No award.*

The best six iron hurdles for a fence to retain cattle, two sovereigns, to Hernulewicz, Main, and Co.

The best set of traverse divisions, rack, and manger for farm stables, two sovereigns, to Hernulewicz, Main, and Co.

The best set of farm harness, one sovereign, to Francis Campbell, Inverness.

The best set of tools for cutting field drains, one sovereign, to William Cadell, Sons, and Co., Cramond.

The best set of tools for cutting open drains in hill pastures, one sovereign, to William Cadell, Sons, and Co.

The best dynamometer for general purposes, five sovereigns, to Alexander and George Slight.

EXTRA IMPLEMENTS.

The Judges *commended*—horse hoe, or drill harrow, belonging to P. Macgregor and Sons, Keith. Yester plough for two horses, Alexander and G. H. Slight. Tweeddale plough for four horses, Alexander and G. H. Slight. Tweeddale trench plough for four horses, Alexander and G. H. Slight. Soam chain and pulley for four horse yoke, Alexander and G. H. Slight. Steam engine, Smith, Brothers, and Co.

MISCELLANEOUS ARTICLES.

Sheep-dipping apparatus on wheels, belonging to Thomas Bigg, Leicester House, Great Dover-street, Borough, London, *highly commended.*

Sheep-dipping apparatus, with iron-barred drainer, belonging to Thomas Bigg, London, *commended.*

GENERAL COLLECTION.

Specimen of ornamental fences for gardens, and specimens of iron and wire camp stools, *commended;* six royal Albert garden chairs, *highly commended;* royal Balmoral garden chair, two royal Victoria garden chairs, six poultry feeders, long pig trough, and sack holder and barrow, *commended*—all belonging to Hernulewicz, Main, and Co.

Patent turnip cutter, oilcake crusher, and improved sack holder, Richmond and Chandler, *commended.*

Collection of glazed troughs for cattle, horse mangers, &c., John Robson, 26, Commerce-street, Glasgow, *commended.*

Collection of flower vases, pedestals, chimney cans, &c., John Wauchope, of Edmonstone, Dalkeith, *highly commended.*

Wrought iron lodge entrance gate, carriage road gate, iron and wire arches for gardens, two-horse swing plough, iron plough guide, drill harrow, iron tar barrow apparatus, iron cheese press, wire flakes for enclosing sheep, wire netting for enclosing sheep, wire netting for enclosing poultry—all belonging to Young, Peddie, and Co., *commended.*

THE BREEDING OF SHORTHORNS :

HOW FAR, AND UNDER WHAT CIRCUMSTANCES, MIGHT THEY BE ADVANTAGEOUSLY CROSSED ? AND COULD AN ANIMAL HAVING A CROSS IN HIS PEDIGREE EVER BE EXHIBITED AS A PURE SHORTHORN ?

The discussion on this subject took place after the stewards' dinner on Wednesday. The Provost having been called to the chair, Mr. Harvey (Tillygreig, Aberdeenshire) opened the discussion. He said it had always been the practice at the meetings of this society to have a discussion on some topic connected with agriculture; and Mr. Hall Maxwell having called on him some time ago to take the initiative on the present occasion, he had undertaken to do so. The questions for discussion were, first, "The Breeding of Shorthorns; how far, and under what circumstances, might they be advantageously crossed? and, secondly, could an animal having a cross in his pedigree ever be exhibited as a pure shorthorn?" There seemed to be a direct answer to the latter part of this question, for it was impossible for an impure animal to become a pure one, and a cross could not be a shorthorn. But many would go back and say, What are your shorthorns?—where did they come from? and that would be a puzzling question; for, in the improved shorthorn, there was a mixture of not one or two, but of three or four distinct breeds. It had in it a dash of the Danish, a touch of Holland, a little from Galloway, and something from the banks of the Tees. The mixture took place in the very infancy of cattle-breeding, and was so long gone by that it was not easy to say how it originated. It was at the end of last century that the shorthorn began to be regarded as a distinct breed of cattle. He was lately at an exhibition of cattle, at which the Red Galloway appeared to be despised, but it was to these red-skinned animals that much of the excellence of the improved shorthorn was attributable. Collings helped to improve it, and then came another who might be regarded as the head of the school. A hedge-side cow had something to do with it; and though the pedigree of the male head of this race was not well ascertained, it was from Mr. Collings's calf "Bolingbroke" that the present breed sprung. They had now attained great celebrity, and possessed characteristics well entitling them to the designation of a pure breed. But the cupidity of individuals had a hand in trying to degenerate, by introducing the bar-sinister. They had now shorthorns with uncertain pedigree, and some with no pedigree at all. He was only desirous of opening a discussion on the shorthorn, for he saw around him the faces of gentlemen who were much better qualified to speak on the subject, and who, if he mistook not, were also willing to aid in the discussion. He would name Mr. Cruickshank, Cloves; Mr. Simpson, Cobairdy; Mr. Williamson, Auldton; and Mr. Milne, who were authorities on the subject, and who, he trusted, would give the meeting the benefit of their experience. For himself, he had cultivated the shorthorn breed for about eighteen years, and his maxim had been and was—Give me purity. He would desire to inculcate on all parties, that all who wished to rear this valuable breed of cattle—which, among ourselves and among other nations, was daily increasing in estimation—should hold by the principles of purity just as tenaciously as Mr. Hope, Fenton Barns, would hold with regard to his wheat, or other enthusiastic farmers would, who each rode his particular hobby. Purity should be the order of the day. As an argument in favour of purity, he would mention, that while other valuable breeds arose from crossing—and he meant no offence to Mr. M'Combie, who held another class to be the most valuable in the world—the shorthorn improved with every successive generation, and that, consequently, it was a great matter to keep them pure. The question had been started, how were they to keep them pure? The breeds of pure shorthorns were in the hands of a few, and were becoming less and less in the number of their changes; and in the very considerable district to which he belonged, it had become a question whether or not to introduce a cross among the pure breed; and if introduced, it would be well to have it definitively settled at what stage they ought to be regarded as pure—whether at the fourth, the fifth, the sixth, or the seventh cross they should be regarded as reverting to the pure shorthorn. He desired that question to be definitively settled. A difficulty would thus be removed, and parties who had taken a great deal of pains to rear another class of stock, through which, it must be admitted, the rents of the farms in some parts of Scotland were in many instances paid, would be satisfied. He had seen, in his own experience, after breeding down to a sixth, seventh, and eighth cross, a bull appear which could not be entered in the Herd Book as a shorthorn from his black and white marks. No longer ago than the day before, he had travelled on the coach with a breeder—Mr. Grant Duff of Eden—who then had heard nothing of what was to happen at that meeting. They came to talk of shorthorns, and what Mr. Duff said was this: "We are crossing our shorthorns down here, and I am satisfied that cross blood will not do, for I have seen as good a black polled bull at the seventh cross as it was possible to see." It was a thing contrary to all reason and propriety that at a seventh cross they should be introducing a black and white bull to a red herd. It mattered not what was the symmetry or what the pedigree of such an animal, the colour was wrong, and it ought not to be admitted into a shorthorn stock-book. The black nose in the shorthorn is wrong, and without going to Paris he would say also that a black tail was wrong. He appealed to Mr. M'Combie if this was not the case. As little would it be proper for us to permit this, as it would be for the black-bull people to admit a stain in their blood. They must stick religiously to purity of blood. At Paris he had something to do with the black bulls, and he was pointing out a handsome black bull to a French gentleman, who said, "That bull is not of the pure black—those lumps do not belong to the Aberdeenshire breed": he could not gainsay the remark, for his opinion quite coincided with it. As they were arranging their breeds not for themselves only, but for Europe, if they were rigid before in adhering to the principle of purity, they must be still more so now. There was another fact that he would mention. There were not only black bulls but Highland cattle at Paris, and he happened to point out a very nice West Highland cow to a friend, when he remarked, "She is a very good one, but she is too like the shorthorn." He liked the remark, for there stood an exhibitor sticking up for purity of breed. Every breed had its weight at this show, as it had at Paris; let us therefore keep each of them pure. Each has its own points, which will in time develop themselves probably as well as those which have been produced in the shorthorn. It was not merely selection in the breeding stock, nor was it simply the breed, but success depended also upon giving the same attention to preserving the purity of the blood. If they leaned on pure stock, let them stick to pure stock; if they crossed, let them keep to crosses; and if a new breed should arise, in addition to those already existing, let the same prominence in competition be given to it, let it have the same attention at the hands of breeders, the same premiums from our societies, as the three distinctive breeds we already possess (cheers).

Mr. Williamson (Auldtown), said he had always been a breeder of the crosses of Aberdeenshire; but he could say this, that he held cattle at the sixth or seventh cross which were deeply tainted with the black cattle blood. He had great pleasure in being able to confirm Mr. Harvey's statement on that subject, and regretted he could say nothing more on the question.

Mr. Collie (Ardgay), said he had paid little attention to the breeding of shorthorns, compared to many gentlemen in the room, but he agreed with Mr. Harvey as to the importance to gentlemen who had shorthorn stock of keeping them as pure as possible. It was not necessary to go back and ask how the shorthorn breed originated. They found a breed existing in the country as pure as they could desire, and it was their duty to preserve it as pure as possible. There was no necessity to go to a cross to try to purify it, for it was already almost as good as it was possible to wish.

Mr. GEDDES (Orbliston), said his sentiments coincided with those of Mr. Harvey, and it would be a work of supererogation to recapitulate. He must say this, however, that he fully estimated how necessary it was to maintain purity of blood, and that it should be kept up without alloy. As to its use in other respects he had his doubts, for he was aware of instances of a fourth or fifth cross being such that from the appearance he would defy the most able judge to say whether it was a pure breed or not, while in other respects it possessed all the good qualities of the pure breed. But he did not say that any one seeking to keep up a pure breed should introduce other blood, although this might be the case in some instances. The purity of the blood should undoubtedly be kept up with care and zeal.

Mr. BOWIE was called upon to address the meeting, but as he bred only Angus-polled he declined.

Mr. HALL MAXWELL (secretary) did not desire to take any part in this discussion, but he wished to observe that the resolution submitted by Mr. Harvey embraced two questions. The first was, under what circumstances could shorthorns be advantageously crossed? This was not a question on which he would venture to give an opinion before so many practical men; but the second part of the resolution affected him considerably, as secretary of the Highland Society, and also his friend Mr. Harvey, as secretary to the Royal Northern Society, and the answer to which would greatly assist them in the discharge of their duties, and was—When may an animal with a cross in his pedigree be admitted as a pure shorthorn?

Mr. HORNE: Never.

Mr. MAXWELL: An animal might be presented for exhibition without a pedigree, with a taint of a cross in him, and at the same time his points might be so perfectly pure that it would puzzle the eyes of a judge, as Mr. Geddes remarked, to tell in what respect the animal was different from a pure shorthorn, or to say why it should not be exhibited as a shorthorn, as it had all the good points and economical advantages of that breed. There was no good rule to go by. As secretaries, they were compelled to admit such animals in the class for which they were entered, and to leave it to the judges to say whether they should be allowed to compete. An objection might be taken by some competitor, and thus a stoppage of a show might occur. Such an animal might gain a prize, and a challenge might be given by some disappointed competitor, on the ground that the animal which had received the prize as a shorthorn was not really a shorthorn. In such a case the question would be referred to the judges, but the judges at Berwick may take one view, and the judges at Inverness may take another view, and no rule had as yet been laid down on the subject, and no answer given to the question whether such an animal was or was not a shorthorn. He had already explained that if such an animal were entered for exhibition as a shorthorn, no matter how many crosses there might be in him, he would admit him, and leave it to the judges, who were not always the same, whether or not the animal would be allowed to compete. This question would be raised at the next show at Aberdeen, and might occasion much difficulty. It would also come before the directors of the Highland Society, and though he would not say that the question would be settled by any decision which might be come to that night, it would be important if an indication of opinion was given as to whether a rule should be laid down, or whether it should be left open far the judges to decide as at present. He therefore ventured to direct their attention to the last question in Mr. Harvey's proposition, with the view of giving some expression of opinion on that point.

Mr. SIMPSON (Cobairdy) said Mr. Maxwell's question was very difficult to answer, and for his own part he thought the present rule of the Highland Society was the best that, under the circumstances, they could follow—namely, to let any man exhibit in the class he believed his stock to belong to, and let the judges decide whether it is of that class or not. He believed that the present shorthorns were bred from the Galloways, and that it was from them that they derived their short legs. A large breeder in Aberdeenshire, Mr. Grant Duff, of Eden, used to hold that the sixth cross was pure, but from his own experience he could not say that he was prepared to state what were his opinions.

Mr. CRUICKSHANK (Cloves) could say very little as to when a crossed shorthorn became pure; he would make a remark, however, on a topic which had occasioned some discussion in his district, and on which a friend of his in Huntly had written a book. He had observed that when a polled cow was put to a shorthorned bull, the system of the cow seemed to become permanently affected. Some good always remained. He found in his experience that a cross quey, and a polled Aberdeenshire bullock, produced as nice a polled Aberdeenshire bullock as he wished to see in a showyard. He had seen a third or fourth cross exhibited as pure, which could not be detected as pure. There was one thing he would say as to the polled breed, that no animal carried more or better flesh than their crosses. They possessed all the properties of a good butcher's beast, for a farm such as his own at least; and in a third or fourth cross, no practical breeder could refuse them as not pure without a pedigree. As to the time when such crosses became pure animals, he could say nothing.

Mr. M'COMBIE (Tillyfour) said that he quite agreed with Mr. Harvey, and as completely disagreed with his friend, whom he had long known as an enterprising farmer, Mr. Cruickshank, Cloves. Any mark whatever of impure breeding was most distasteful to the pure breeder—there was nothing he detested so much. A breeder of polled stock hated nothing so much as to see shorthorn marks in his calves. It would be impossible for any one to pass off bulls and heifers as being pure when in fact they were crossed. He had never seen one that his friend Mr. Buie there could not detect, and he had found the same thing even in his own experience. He wished to say something in favour of the polled breed, and it was, that a good thick polled stot paid better than a large cross one—he got as much for it. He was one of those who depended entirely on his cattle for the means of earning a livelihood, and if he found that the Baker-street butchers began to prefer another kind of animal than that which he supplied, he would begin to think what he was about. But at present he found that he got as much for his small polled beast as was given for the large cross-bred beast, even though a fourth part of the weight more. He had sometimes been at Smithfield, and was lately there in company with a practical dealer, who took him to a place where there passed by three small Galloways, a large shorthorn bullock, and a number of Hereford bullocks as fat as mud. "Now," said this dealer, pointing to these lots, "I will tell you something that may be of use to you in making up your mind upon breeding. You see these different beasts; well, I can just make as much of the small Scotch ones as I can by these great mountains of flesh—as much by your small, firm, broad-backed Scotch ones as by any crosses, however big they may be." To return to the question of purity of breed, he believed that in ninety-nine cases out of one hundred, cross blood could be detected. They might pass muster with some parties, but not with those who knew both classes.

Mr. Brown (Linkwood) approved highly of keeping the breed pure; but at the same time he must say that nothing could be more valuable than the cross between the short-horn and the polled, and he should be sorry to think that it would be considered an unprofitable thing to cross, for few could afford to keep up a pure stock. The country was much indebted to those who kept up the pure breeds—for purity of breed was a great matter in crossing; and for his part he would always endeavour to go to the best and purest bull, and would always try to get him a good cow. He could not speak as to the subject of when crosses became pure, but was inclined to believe that that never took place. He was sorry that the Society had not continued to give prizes for crosses. It took from the interest of the show, and he was not sure that it was improved by the omission.

Mr. Hutchison (Monyruy, Peterhead) said he had tried several breeds, and his object always was, in making a purchase, to get the best and purest of whatever he wanted—having found it to be the cheapest course in the long run to pay a long price at first. He had seen animals with a great number of crosses, and the oftener they were crossed the less liable would they be to have any accident in the shape of showing any of the points of a bad animal; but if there was any cross whatever, though it should be seven or eight generations back, that cross would occasionally show itself. He was perfectly satisfied of that from what he had seen himself. Pure breeds should be as pure as possible. He did not know if it was still the case; but at one time in the Channel Islands a note of points was kept in a regular herd-book. Whether this could be done in other parts of the country he could not say; but if it could, it would be of great consequence.

Mr. Horne (Langwell) said that if he thought the question they were discussing a practical one he would say not a word; but as to the utility of crossing, which was the first question in Mr. Harvey's proposition, he thought no gentleman connected with Scotland could have a doubt on the subject. It was a most fortunate event that crossing in cattle and sheep in Scotland had taken place, for there was many a district which would have paid no rent had there been no cross. He was sure that no gentleman could doubt for a moment that, in breeding crosses, there must be purity on one side at least. One of the sides must be pure, or the cross would indeed be miserable. That opened the question of maintaining the purity of breeds. He did not think that any number of crosses would produce a pure animal—that was the safe doctrine for Scotland to hold by. Their pure friends, therefore, must stick to their purity, and give them their pure males and females to breed from. That is all they (the cross-breeders) wished from them. They did not care though their pure friends should get as much as 2s. 6d. a-lb. for their meat in Smithfield market, while they themselves only got 6d. for their beef. They would not compete with their pure friends, but they must still be left to make something out of their crosses. He defied them to produce in any number of years a pure animal out of crosses.

Mr. Forbes Mackenzie (late M.P. for Peebles) said that, never having bred a pure animal in his life, he was ill-qualified to address such a meeting on this subject. He quite agreed with Mr. Horne that, before breeding crosses, they must have pure animals to breed from; and, as crossing was so generally followed throughout Scotland, it appeared to him that there were two questions which they ought to dispose of—one, what it was best for the Highland Society to encourage? and the other, what it was best for the country to do? Now it would seem to be better for those gentlemen who lived in high districts, and who had not the means or fitting opportunities for cultivating pure stock—it was better and more profitable for them to breed crosses. But how were they to get good animals unless they had pure sires? and, therefore, it seemed to him again to be right that the Highland Society should give premiums only to pure stock, which, when obtained pure, others should take and do what they liked with them.

Mr. Brotchie agreed that the stock exhibited should be pure, as it was of so much importance to have a pure stock to breed from. He had no practical experience of pure breeding, but always tried to obtain a pure sire, and had thus crossed from Ayrshire, Galloway, and Aberdeen. So far as his experience had gone, the best crosses were produced from pure shorthorns and pure Galloways.

Mr. Hope (Fenton Barns) quite agreed with Mr. Harvey as to the importance of keeping the shorthorned breed pure; but as Mr. Harvey had stated the shorthorn was originally a cross, he thought it was still possible to produce a pure shorthorn by crossing. He did not think, however, that it was necessary to run the risk of attempting to produce shorthorns by crossing, for herds of shorthorns now existed all over the country, of every variety that any breeder might fancy; and, in breeding pure stock, they should select animals from herds situated as widely apart as possible, so as to get variety of blood. This was a better course than running the risk of failure; and, therefore, he thought the rule of the Society should be adhered to.

Mr. Harvey replied. So far as he had gathered the collective opinion of the meeting, they were all of one mind with regard to purity. It mattered not on which side the stain was to be—if they were to have purity in the male they ought to have it in the female—and purity of breed argued purity on both sides. He perfectly agreed with what Mr. Horne remarked with regard to certain portions of the country which gained their bread by their crosses; but according to the meeting, they ought to have purity in the abstract, and a regular herd-book should be kept. It was hard to call upon a judge, who had his own onerous duties to perform, to decide upon the breed of the animals exhibited, and to impose on him the invidious task of telling an exhibitor that his stock was impure. It would be far better to have a herd-book, which should regulate the admission into the show-yard of pure stock. He thought the sense of the meeting would be best expressed by a resolution to this effect, namely—that the polled Highland, Ayrshire, and shorthorn breeds should be kept pure, that regular herd-books be kept, and regular pedigrees made, without showing which, cattle of these breeds would be inadmissible into any show grounds; and at the same time the meeting, recognising this principle, that as there is a justly valuable breed of crosses, whether of one kind or another, in this country, at all show-yards there should be a certain amount of prizes given to them. The object of the Society was to encourage agriculture, and he thought it hard, as pure stock was kept chiefly for the purpose of crossing, that those should not be rewarded who just exactly did, or were prepared to do, what the pure breeders only gave them the means of doing.

Mr. Hall Maxwell admitted all Mr. Harvey had said as to the use of herd-books and pedigrees, but if the suggestion was adopted he was afraid the gentlemen of Ayrshire would object to it. The proposition means that no animal shall be allowed to compete without a pedigree taken from the herd-book. Gentlemen who knew the district where the Ayrshire breed is to be found in all its purity, know that many of the farmers there are not in a condition to keep those books. If the resolution were adopted, it would be rendered nugatory by there being no show of Ayrshire. He thought that, while the meeting might express its opinion in favour of herd-books and pedigrees, it might be going too far to adopt the resolution.

Mr. **Miller** (C.E.) would like to ask Mr. Harvey at what date he would have those herd-books to commence? Fifty years ago there was no purity of breed at all.

Mr. **Horne**: The matter of the resolution might be put in the shape of a recommendation to the Directors of the Highland Society. Some years ago they gave premiums for crosses; but for the careful husbanding of the funds, or the securing purity of breeds, those premiums were withdrawn. He was not then on the direction, and was not a friend to the withdrawing of those premiums.

Mr. **Maxwell** said the practice was changed after very careful consideration. It had been admitted that good crosses depended on the preservation of the pure breeds, and the public was entitled to look to the Highland Society protecting and maintaining them. It was for the local societies to give their premiums for the crosses they found best or most profitable for their own purposes.

Mr. **Graham** (Barns of Limekilns) confirmed the remark by Mr. Maxwell as to the Ayrshire stock. In his opinion there would be no show of Ayrshires at the Highland Society's exhibitions if the resolution was adopted. At the same time he thought that they had already at their shows as pure a breed of Ayrshires as they had of any other kind of stock. He hoped the premiums for Ayrshires would be raised to the same rank as those for shorthorns, for milk, cheese, and cream were valuable products. He had been in Aberdeenshire, and found the meat, the bed, and everything good but the cream (Laughter).

Mr. **Geddes** thought they were passing over the question of when a cross might be exhibited as pure. He thought they might pass this resolution—"No shorthorn shall be considered pure with a stain of any other blood in him."

Mr. **Harvey** said their desire was to elicit truth and settle difficulties, and he thought the matter might be left in the hands of the Highland Society, with a recommendation that the views expressed here should be taken into their serious consideration. He agreed with Mr. Cruickshank, that each and all of the breeds should be kept pure.

The resolution was then agreed to, in the form that all the breeds should be kept pure, but that no formal recommendation should be sent up to the directors of the Highland Society.

Votes of thanks having been given to the Chairman and Mr. Harvey, the meeting broke up.

INTRODUCTION OF STEAM POWER IN FIELD CULTURE.

We have long beheld with no ordinary satisfaction the great impetus which has of late years been given to the onward progress of agriculture. The energy, talent, and capital, the mechanical skill, engineering ability and chemical science which have been brought into requisition for the purpose of developing the utmost powers of the soil under the best practical management, cannot fail to win from us our highest meed of praise. We hail with great gratification those strenuous and enlightened efforts which have been made, and are now making, to introduce every available appliance and judicious practice likely to promote agricultural advancement. "Time was, when Adam delved, and Eve spun." In the vast and progressive prosperity of Great Britain "Eve has long been in advance of Adam." Spinning has attained far greater perfection than delving; for obvious reasons: mechanical contrivance is applied in a fixed and convenient form: all that such skill and that scientific talent can achieve is brought into full operation within a limited space. This cannot be done in agriculture with ease and facility; but, notwithstanding, great progress is daily making. Throughout this and the sister kingdom great efforts are made to introduce into every-day practice the same powers which have caused such an astonishing increase in the manufactured products of the country. Mechanical skill has done much in promoting the prosperity of agriculture. The plough is now nearly perfected. Agricultural machinery of the very best character and workmanship is now supplied at a cheap rate for every conceivable purpose of farm husbandry and management. For many of the important operations of farm business the power of steam has been brought into general use. All labour that can be done by a steam engine being stationary is executed by steam power. This is the rule already. The great problem to be solved is the introduction of steam motive power in field culture. This is the grand desideratum. That it will be achieved, we have not the shadow of a doubt. Indeed it was shown it has already been accomplished, at the late meeting of the Royal Agricultural Society at Chelmsford. The important question of economy is, however, yet to be solved. Ploughing was effected, well performed, by both fixed and locomotive engines. Trench ploughing, subsoil ploughing, cultivating, was alike efficiently done. The fact is complete. Steam motive power can be applied to field culture. What, then, is it destined to achieve in agriculture? Its power in promoting progress in manufacturing industry is most marvellous—can it effect much in cultivation? We think it can. It is the motive power that is required: all other requisite appliances are available. We think it is destined to accomplish a benefit as great for agriculture as for manufactures: not precisely in the same way, by administering power merely, but in the collateral advantages that must follow. It will ultimately revolutionize agriculture, as it did the old spinning jenny, and the still older distaff. We are well aware that the soil, whether cultivated by steam or animal power, has only certain inherent resources to be fully developed. It cannot be made to produce grain so speedily and continuously as a mule-frame will yield reels of finely-spun thread. But it will do this—it will set aside all obstacles to good cultivation. Farmers will not then abandon deep culture to save their horses. The steam-horse may work, and can work, with all his power. Nor will it be requisite for this steam-horse to tread the land in unfavourable weather; he may work when the animal must stand still. Give him coal, and give him oil, *he never tires!* What would not the farmer give, in very many cases of emergency, to have such a power brought to his aid. Besides this, the steam-horse can thrash his corn, cut his chaff, break his cake, grind his beans, his oats, and his barley for farm service; and then, again, as a recreation, turn to and cultivate his field to any extent, and do many other works for which he is well adapted. In drawing his carriages, his harvest carts, his dung carts, his draining plough, or his reaper, he is not to be despised; the farmer has only to make suitable arrangements as to the place and position of his stacks, or the rows for his manure heaps or spreading. The same appliances may be readily brought to bear in executing the work of each field, providing it be *done in the field.* Nor is it in the fulfilment of the ordinary operations of field work that we view the introduction of a steam-motive power with so much interest. Our anticipations go much further. We believe it will revolutionise the whole order of farm management, and every department thereof. Take the clays of this great clay country—for the majority of soils in this country consist of retentive loams or stiff clays—bring the steady draught of windlass and chain worked by steam-power to bear upon them at great and equal depths till the whole is deeply pulverised and comminuted for every required purpose. We admit of no bounds, no limit to the productive power of such soils under perfect culture. We could point to many cases of retentive clay soils under such culture, which have yielded splendid crops of wheat and potatoes successively for many years; and our conviction is that by steam appliances, judiciously carried out, farmers on such soils may be enabled (with the usual aids of fold-yard manure and artificial dressings) to produce the most valuable crops without intermission; and, if they please, successive crops of the same grain—wheat, for instance. We know it is now done upon a poor clay soil, and that without the application of any manure whatever; the aëration of the soil by atmospheric influence alone sufficing to keep up its fertility, supplied, as it is, by frequent stirrings or workings at great depth. Take, again, common farm management. What a revolution will the vast powers of steam effect in ordinary farm practice! Autumn culture would be perfected, whilst the farm-horses are securing the harvest. The steam plough, or digger, or cultivator, or scarifier, or broadshare, or harrow, or any other appliance whatever is best calculated to achieve in management what the farmer in his judgment sees most desirable, can be set to work; and, what is better, it can, as we have before said, be kept at work from early dawn to dark night: it matters not how many relays of men may be required, the power we have, and we must use it. Autumn cultivation is invaluable, but it is scarcely practised, or to a very limited extent, simply from the inadequacy of means at the farmer's command. This would soon become universal, the good sense of the farmers would speedily induce them to adopt it generally; at present its universality is impracticable. Again, this motive power can be applied at all times, or nearly so. Upon well-drained lands no ordinary rains need impede it; there is no tread of the horse to poach the land; all is broken up, and a few hours' sun or wind will soon prepare it for further working. We might bring many instances to prove its exceeding usefulness in this respect as to farm management. We will only now just say, that it would also revolutionise the whole system or order of land-letting or tenantcy. Old covenants would be useless; new orders of management, new rotations of cropping must ensue. The farmer's skill and talent will be his guide, in the place of an obsolete lease. This—this will be its greatest work: the overturning of the absurd restrictions in most farm leases. We shall rejoice in its prosperity.

We believe a totally new order of tenantcy is required. The advancement of agriculture cannot proceed with that advantage to the public and safety to the tenant which the superiority and cost of modern culture will entail upon him. He above all others must have security for the capital, skill, and energy he throws into the cultivation of his land. Covenants, we know, are merely to keep bad tenants in order; but we think all agreements binding tenants to certain prescribed courses of management should be abolished, and the very simple one substituted, compelling the tenant to cultivate in a proper and husband-like manner, subject to the decision of a jury of his countrymen, as in so many other cases, and to be decided in the district county court. Open courses of management must be granted to tenants, or improvements are of very little value, particularly if carried out upon the grand scale we would lay down for future farm management. It is in the highest degree absurd to bind a tenant down to a lease of "the olden time," with all the new appliances before him, and prepared, as he now is, by education, by a laudable spirit of inquiry, and a desire to excel, by intelligent persevering industry, and by a ready application of his capital to attain the very utmost products which can be drawn from a most generous soil.

NEW ACT TO PREVENT FRAUDS IN THE HAY AND STRAW TRADE.—An act was passed in the late session to prevent frauds in the binding and false packing of hay and straw. Many frauds and abuses are stated to be committed, in putting earth, sand, &c., into trusses of hay and straw. No sand, &c., is to be mixed with hay or straw to increase its weight, within the cities of London and Westminster, or within 30 miles. Salesmen are to declare the names of the owners of such hay and straw. The clerk of the market, upon complaint, is to weigh and examine the hay or straw, and, if found deficient, to summon the offenders before magistrates, who are authorised to inflict a penalty of £10. The 36 Geo. III., c. 88, and this act are to be construed together.

ON THE DIVISION OF LABOUR.

TRANSLATED FROM THE FRENCH

By L. Mole.

After having laid down the principles which appear to us to constitute the basis of this important subject, it remains for us to speak, in a general way, on some points which, though secondary, do not the less possess a real practical value. We refer to the division of labour, and of control in questions of quantity and quality.

It is well known that the *division of labour*—that is to say, the distribution of various operations amongst many workmen, who remain, each in his own department, always engaged on the same task—is, in manufacturing industry, an agent of incomparable power for the increase of the productive faculty of labour.

Most of the works on political economy cite examples of this power, which would be deemed fabulous if they had not long since been verified and become facts of daily occurrence. It is frequently in the proportions of 1 to 100, 150, 200, and even more, that it is found possible to increase the effect of individual labour by the employment of this ingenious combination. Adam Smith, also—who was the inventor of the term, and who first reduced it to a theory, which has now long been carried out in practice—in his enthusiasm, describes the division of labour as the sole cause of the superiority of a civilized over a savage people: making thus a complete abstraction of the empire which the civilized man has acquired over himself in creating capital, and employing it in reproduction instead of consuming it; and over material agents, by making them assist in the realization of his own views.

It is fortunate for us agriculturists that the opinion of the celebrated Scotchman is so easily refutable, and has not even been admitted by his own disciples; for the logical consequence of his doctrine would consign us at once unanimously to the ranks of the indigenæ of New Holland and Paponasia.

Agriculture, indeed, has not yet succeeded, and probably never will succeed, to make a much more extended use of the division of labour than the indigenæ in question. Is this a good or an evil? "It is an evil, and a great one," say those who look only at the useful, and who consider man only in his capacity to produce wealth.

Although I am a strenuous advocate for the useful—so great, indeed, that I entertain but a moderate share of that quasi-religious respect, that species of worship which every Frenchman who desires to pass for intelligent and enlightened deems himself obliged to profess for the fine arts and literature, a respect and worship which are, in short, nothing but the exaltation of the beautiful to the injury of the good, of form to the injury of the real—I still consider the useful as legitimate only so far as that it does not exceed the bounds of the good and the just. I advocate the good and the just in the first place, and the useful afterwards.

Now, we are compelled to say it, if in the division of labour the economic problem is resolved in the happiest manner, the interests of humanity are sacrificed to it in a deplorable degree. In spite of all that has been written to refute the book of Lemotry and the attacks of the *phalanxterians*, their arguments still exist, and have acquired even greater force in proportion as industry developes itself. I am perfectly convinced that a remedy will one day be discovered. Perhaps machinery will be the balm that will heal these wounds; but in the meanwhile those wounds exist, and the working populations of the great centre manufactories of Europe furnish irrefragable proofs of fearful eloquence, of the disastrous influence exercised by the division of labour over man, as well in a moral and intellectual as in a physical point of view.

Some have attempted to prove its harmlessness over the mental faculties, by saying that the agricultural population do not possess more intelligence, but rather less, than the manufacturing classes. I acknowledge, up to a certain point, the correctness of this assertion; but they must still admit that the first are superior to the second in a moral and physical point of view, which is an important consideration. I will add, that if we gave to the labourers in the country one-fourth of the means of instruction possessed by the working classes in our cities; if they were, like them, brought into frequent daily contact with the higher and instructed classes; if they had constantly before their eyes the inventions and improvements of every kind, resulting from the discoveries of science, I have not a doubt that we should see them rapidly surpass the intellectual level of our city operatives.

We must, therefore, at once admit that the division of labour carried to the extent in which we see it, is a good in an economic point of view, but an evil in respect to our common humanity.

Consequently, although injured directly in my personal interest and in my position as proprietor of a large farming establishment, as a man and a christian I cannot but rejoice at the insurmountable obstacle presented by agriculture to the adoption of the division of labour like that of manufacturing industry. This fact would suffice, if that were necessary, still more to raise in my estimation that great and noble profession, and to show that whatever may be done, and whatever happens to it, agriculture, in small as well as in great things, in the whole as well as in the details, will never cease to be the benefactress of humanity; and that it is actually, and in all points of view, the parent of industry—the natural, primitive, necessary industry—and the sheet-anchor to society.

At the same time, agriculture does not absolutely exclude all division of labour; and the part that it admits, however contracted it may be, constitutes also one of the small number of points in which large farming has a marked superiority over small.

Thus, although we cannot sow, mow, plough, thrash, dress grain, cut roots, weed and dress the land again during the whole year, it is certain that in an extensive cultivation, in which we operate upon a vast surface, and employ a numerous staff, it will be possible, intelligently, not only to apportion the labour according to the strength and capacity of the workmen, and thus give to the strong the work which requires a greater degree of vigour, and to the weak those only requiring skill and attention, but also to observe a certain division of labour; to employ, for instance, always, or nearly so, the same individuals in ploughing, others in sowing, others in mowing, &c., &c. It will be seen that the man who does all, or nearly all, the sowing, for example, on a large farm, must necessarily acquire in that operation a degree of skill incomparably greater than that to which the small farmer can reach, who sows each year only a small surface, and in one single day is engaged in three or four different operations.

We can apply the division of labour, and do so in many operations, even in the teams, by having oxen, for example, for ploughing, clearing, and breaking up land; and horses for carting, harrowing, rolling, &c., &c.

Although this arrangement enters, in some respects, into another order of ideas, it is not less a division of labour.

The skilful husbandman extends the principle even to operations of detail. Thus, in transplanting beetroots, cabbages, ruta-bagas, &c., whilst on a small farm the same person prepares the land, draws the plants, stretches the cord, makes the holes, puts in the plants, and fixes them; on a large farm, one man ploughs the land with oxen, others harrow, roll, and form the lines in it with horses. Again, whilst women draw the plants from the seed-bed, some vigorous workmen, each armed with a double dibbler, and following the traced lines without those fatiguing changes of motion, rapidly form the necessary holes, into each of which a woman who follows with a bundle of plants drops one, which another woman furnished with a dibble immediately fixes, by pressing the earth all round it.

This is an actual division of labour; and it cannot be disputed that we should derive from it a great increase of work if the operation of planting lasted the whole year. All agriculturists who employ this usage more or less, and others analogous, have certainly been able to state, as I have frequently had occasion to do, the difference between the commencement and the end, both in quantity and quality of the work performed. It is always at the moment in which the workmen begin to be perfectly *au fait* at the operation that they leave off. And it is the same year after year, whatever in other respects may be the extent; for the time during which they can transplant is limited, and if they have much to transplant they must have several workmen, so that none of them attain to any great degree of skilfulness.

All agricultural works possess the same character. It appears that agriculture, as a whole, ruled exclusively by the great principle of the interests of humanity, repels in an absolute manner every combination calculated to injure that fundamental interest.

Now, I have said, and everybody says the same, that in order to produce wonderful results—fabulous profits, the division of labour is compelled to put this interest aside.

In spite, however, of this insurmountable obstacle to the developed application of the principle of the division of labour in agriculture, what we can have of it is sufficient to establish the superiority of large farming over small, in matters of work, were it not for one circumstance, which, in my opinion, has not hitherto been sufficiently appreciated, but which, notwithstanding, bears heavily upon practice: I here speak of the *difficulty of control*—of the absence of all exact, rigorous measure for the valuation of the work done, both in respect of quality and quantity.

In manufacturing industry, the just medium is known and calculated beforehand. Besides, a trial of a few days, or even a few hours, would be sufficient to allow of permanently fixing the task of an operation; for the conditions remain the same, and that which is done one day may be done during the 365 days of the year. Besides, the movement is ordinarily supplied by water or steam. The moving machine, that obedient servant, subdues to its inflexible law the will of the workman. It is not he who regulates the action of the machine; it is the machine that rules his. In short, the facility of appreciating with precision the quality of the work allows them almost at any time to put the men to job-work. Hundreds, and even thousands, of operatives, also, will work in the same building, under the inspection of some overseers, and the direction of a single chief, who, in his office, directs the whole. And when even these workmen are animated with hostile sentiments against their employers, they would continue to work well, to satisfy the conditions both of quality and quantity; for, as we have already observed, everything is foreseen and calculated in advance, and the control is wonderfully easy. A large factory is, in this respect, a convoy placed upon rails: there is no stepping aside, on pain of a break-down.

In all these respects, how hard-favoured poor agriculture appears! I have mentioned convoys and rails. In order to continue this comparison, which appears to me to be just, I shall liken rural employment to a car travelling upon a cross-road, the difficulties of which often vary from one to ten, according to the places, and for the same place, according to the weather; so that not only are we unable strictly to calculate the maximum of expenses and the duration of the journey, or to prove to the carman that he has trifled on the road, but it will even be impossible to specify beforehand the precise line to follow. Unless you are constantly at his heels, you must, in a majority of cases, have confidence in his intelligence, and what is still more delicate—in his good-will and zeal.

Thus, let us state this great fact: In order to be good, useful, or profitable, agricultural labour ought to be executed, if not with first-rate talents and genuine friendship, at least by workmen desirous of doing their best, having at heart the interest of their employers, and endowed with a fair degree of judgment.

Whoever has at any time had the superintendence of men generally, and of operatives in particular, will assuredly acknowledge the importance of that situation in an economic point of view. But he who carries his glance higher and further than the useful, who sees in the relations of men amongst them much more than the creation of values, these will also recognize in this condition imposed upon the parent industry an admirable and providential law, which tends to unite more closely the inferior and the superior, by making profit the first condition of that union—a law so powerful, that even a great degree of activity, and the art of command in the master, can but imperfectly supply, and at the expense of innumerable pains and fatigues.

Why is it necessary that honesty, devotedness, and even conscience, should now be so rare in our rural districts, as well as elsewhere?

Let us see, however, if there is still material, still some chord we can make to vibrate. Let us attempt a short sketch of that important element we call the agricultural labourer.

Since the appearance of the "Paysans" of Balzac, a great number of persons have gone from one extreme to the other with regard to the rustic, in whom they perceive nothing more than a sordid interest, knavishness, and stupidity.

There is truth at the bottom of this, but also manifest exaggeration.

The countryman keeps closely to his own interest, beyond a doubt; but his gains are so painfully acquired, that we can only pity and excuse him. And in the meantime, however interested and obstinate he may seem to be, he suffers himself to be guided by his feelings much more than we think. His sympathies and antipathies, his respect and admiration—his contempt, confidence, and mistrust—all these, we must confess, possess very little or very bad reasoning, and belong for the most part to causes which would exercise no influence on the opinion of an enlightened man. The cause is, that the countryman above all others is the creature of habit.

Tradition has a great influence over his mind. Such a family has a reputation for honesty, another for skill, &c.; and this reputation is transmitted from father to son, attaches itself more or less to all the members, and is insisted on a long time after facts have occurred to invalidate it.

The agricultural labourer will work, therefore, with more zeal and ardour, and will do much more and better at home than elsewhere.

It is not without regret that I feel it my duty to add, that the reputation for cleverness, even in its bad acceptation, will frequently exercise a more powerful influence than the reputation for honesty. We are not composing idyls, but describing things just as they are.

However this may be, unless in circumstances quite exceptionable, the agricultural labourer will always go willingly with the proprietor of the country. He may work for him more or less efficiently; but, at any rate, he finds himself more at his ease there, because the land is known to him. And I again say, the son inherits the confidence that was placed in his father, did he never set foot in the neighbourhood.

But the stranger! I should have much to say on this subject, but this is neither the place nor the moment to treat upon it *in extenso*. I shall confine myself to reminding the reader, that amongst the best populations the dominant feeling towards him is that of at least defiance, to which may be added everywhere a very decided repulsion; and this is more especially the case in countries where they speak a patois, or any language that is not French, as Provençal, Languedocian, Limousin, Basque, Bas-Breton, &c.

To be ignorant of his speech is, in the eyes of a countryman, high treason against the locality quite unpardonable. Nor would I advise an agriculturist from the north or east, unless under very powerful motives, to go to settle himself in any of these patois countries; and if by chance events bring him thither, I would advise him to devote a certain time, were it even a whole year, to learning the language of the country before making a beginning. This would be time usefully employed.

When the foreign agriculturist has the good fortune either to be patronized by an influential man of the locality, or, better still, of succeeding a skilful husbandman who has made his experiments, of which the system has received the sanction of facts, and who remits to his hands a regularly organized cultivation, in some respects a machine well put together, which it is sufficient to supply with water and combustibles to keep it at work indefinitely, then nine-tenths of the difficulties of his situation are overcome. After some weeks, or months at the utmost, of hesitations and feeling his way, everything will resume its regular course, if the workmen have found in him an intelligent man, firm and initiated in business.

But if he is obliged to originate and put together his enterprize in all its parts, misfortune, thrice misfortune to him! To the repulsion inspired by his title of stranger is united that which innovation always provokes. In remote countries, or in those of metayage, it is no longer even the agricultural labourer alone who meets him as an adversary, but very frequently the proprietor; above all, the one who finds it more convenient and agreeable, and consequently more worthy of an intelligent man, to cultivate his metayers than his lands.

Thinking himself wounded in his self-love, he attacks with his sarcasms *the poor fool who gives himself great trouble to convert his five-franc pieces into pennies* (a provincial form of speech); and occasionally he allows himself, with perfect atticism, to give him such advice, by way of jest, as will make him pass by "the barrier of the throne to reach the triumphal arch of the stars."

Thanks to those sarcasms, which are added to the evil dispositions already existing amongst workmen, if the stranger has the misfortune to experience some of those checks almost inevitable in every production, his business is done, his reckoning is made, and he is definitively judged in the opinion of the locality. It will require many years, and very eminent success, to overturn that judgment; and until then, he will experience all the vexations that a residence amidst hostile elements must occasion. If he is not quite treated like the poor dog, to whose tail a crowd of young scapegraces have fastened a tin kettle, he will at least be considered and treated like a fowl which every one has the right to pluck at discretion. And if by chance he is not of a humour to put up with this game, he sees a void formed around him. Under the all-powerful influence of ridicule, which they succeed in casting upon him and his labour, he sees the best workmen and servants abandon him, and prefer to him, even at an inferior price, the employer of the vicinity, for they have become ashamed to work with him. It is thus that I have seen improvements, otherwise conducted by competent men, laid in some respects under an interdict—at least for a time.

In such a situation there are only three ways of extrication: first, to obtain his servants, and a certain number of managers, from a distance; secondly, to increase considerably the wages and the price of piece work; thirdly, to arrange the cultivation so as to reduce to its most simple operation, the employment of the hands.

The exclusive adoption of either of these means is rarely to be advised, from motives which may easily be understood, but which would take up too much room to enumerate here. There would, however, often be an advantage in employing all three simultaneously to a certain extent; to bring from a distance, for example, some workmen on board wages—labourers, a shepherd, a cowherd; to increase at the same time both wages and salaries, specifying at the same time that it is done only with the decided intention of exacting more and better work than under the common conditions.

As to the reduction of labour, as it is shown by all that precedes that in no case can it receive an application more useful or natural than in the circumstances here indicated, I shall say nothing except that this means requires equally to be employed only in a certain degree, always estimated according to the normal value and richness of the soil.

I must not finish this subject without noticing a last trait. Success, as I have already said, exercises a great, even immense, influence over the husbandman, especially when it has been obtained without fuss or noisy announcements. With him, as with the Arab, *"God is with the strong."* But I ought to add, to his praise, that in general, success meets with a good reception, a sincere sympathy, only where it is accompanied with that spirit of justice, that honesty, which is too often forgotten in his actions, but of which he knows not the less how to appreciate the just value amongst others.

I come back to control. There are a certain number of agricultural operations in which it is possible to appreciate at first sight, and up to a certain point, the goodness of execution. These operations are included, in this respect, in the class of manufacturing works, and, like these, offer the very great advantage of being converted into *task work*.

The system of task work cannot be too much extended or encouraged. It is as profitable to the employer as to the labourer. The former finds in it the advantage of expending less for each operation, of knowing how much it will return him, and lastly, in having nothing to occupy his mind about but the quality of the work; consequently, having no occasion to exercise that constant surveillance, which is as fatiguing to the master as it is disagreeable to the labourer.

For the labourer, task work is an excellent school, a powerful means of creating laborious habits. Besides, a strong and laborious workman always earns more at task work than at day work, even when the operation is paid for less dearly than it would be in ordinary day work; and he finds in it the great advantage of being free, and able to begin and finish when he pleases. All good workmen look out for *task* work; the lazy alone reject it: and to form an estimate of a rural population, in respect of labour, we have only to inquire if it approves and usually employs this method.

It is unfortunate for agriculture that the number of operations of a nature to be reduced to task work should be so limited. These are—ditch fencing; channels and trenches for irrigation and draining, and in general all kinds of earth works; clearing of lands and woods by grubbing, &c.; the cutting and making up of brushwood and heath; the mowing of grass; cutting cereals and other plants cultivated for their seeds; the pulling up of harvest roots; the thrashing of corn and seeds; marling; most of the operations required in the vineyard; &c.

The advantages of this method are so great, that many agriculturists have attempted to extend it to other operations, but they have not always had to congratulate themselves upon the result. In the operation of *digging*, for instance, a constant overlooking is necessary in order not to be deceived in the depth, which, when once the work is completed, can no longer be ascertained.

In the turning of hay, the method of the operation is equally difficult to estimate. The workmen come when it suits with their other operations, and frequently suffer the most precious moments to go by, which well employed would have enabled them to save the harvest.

In Germany—where the suppression of the last vestiges of feudalism, and especially *forced labour*, had given rise to one of those transitory states in which the equilibrium is not yet well established between the different elements of society, and which consequently present special difficulties—they have attached themselves to the system of contract as to the sheet-anchor of large farming; and for a certain time, the infatuation has been such, that in many farms, all the operations of husbandry were performed by task working. Even the cattle themselves were tended by contract at so much per head. The farm furnished the teams and materials to the labourers and carmen, who received so much for ploughing a given surface; so much for harrowing, rolling, scarifying, second dressing with the horse-hoe; for carting a given weight of dung, of hay, of sheaves, of corn, to a certain specified distance; &c., &c.

It is unnecessary to add that this system, to which they had submitted for several years, even at the great and magnificent establishment of Hohenheim, was attended with so many inconveniences, that they were compelled to abandon it; and I only know a few scattered farms where it may be still maintained. Those inconveniences every practical man will readily comprehend, and it would be useless to enumerate them here.

Fortunately, the bad results of a system carried too far proves nothing against the principle itself. I, therefore, recommend, not only perseverance in the plan of contracts for the operations pointed out above; but further, to extend it by degrees to other operations, as dressing and hoeing, of which I have spoken, cleaning of corn and seeds, servants' board, &c.

In commencing by having the operations executed before his eyes by day-work, by making the labourer well acquainted with the manner of taking it, and the conditions to be fulfilled; in showing himself liberal in the first instance, that is to say, by giving them at least the price of the day-work, which always allows them to obtain an advantage; and, lastly, in controlling with severity and minuteness the quality of the work, wherever it is possible, we shall bring them not only to adopt this method for new operations, but also to execute them properly. However, let us repeat it, without falling into the extravagance which I have pointed out, there will always remain a great number of operations, and amongst the most important of them those of the team, the care of hired animals, which can never be taken by contract.

What is to be done in presence of a disposition generally so unfavourable in the agricultural labourer? *To interest him in the success of the operation.* That were the wise, rational, and moral principle, if it were acted on. But who shall translate it into practical rules, into positive facts? Who will "bell the cat"?

In April, 1848, when so many people were silent who have since found their voices, I thought it my duty to discuss and refute, in my Court, the strange system of agricultural association which was then displayed at the Luxembourg, in the journals styled "of progress," and in a shoal of *brochures* hatched under the influence of events, and the burning words of the master—a system which it was intended, plainly, to extend to the whole of France. The task that I had undertaken, if it offered some dangers for the functionary, presented at least no difficulties to the agriculturist. But, alas! after having demolished this shapeless parade of preparation, I have been able to substitute nothing in its place that is satisfactory. Will others be more happy? May God grant it! for a great, an immense interest is attached to this question.

I therefore address this appeal to all my fellow-members. Let those who have truths in hand not keep them fast closed. Let not those who possess light hide it under a bushel. But, above all, *let us have facts!*

L. MOLE, Professor at the Conservatory
of Arts and Trades, and Cultivator
at L'Espinasse.

A TABLE SHOWING THE YEARLY AVERAGE PRICE OF WHEAT PER QUARTER FROM 1641.

The following table was compiled under the direction and superintendence of Mr. Henry S. Bright, of Hull, (the regular weekly correspondent of the *Mark Lane Express*), and published by him in the year 1854;—

A.D.	s.	d.	A.D.	s.	d.	A.D.	s.	d.	A.D.	s.	d.
1641	57	1	1695	47	1	1749	32	10	1803	58	10
1642	60	2	1696	63	1	1750	28	10	1804	62	3
1643	59	10	1697	53	4	1751	34	2	1805	89	9
1644	61	3	1698	60	9	1752	37	2	1806	79	1
1645	51	3	1699	56	10	1753	39	8	1807	75	4
1646	42	8	1700	35	6	1754	30	9	1808	81	4
1647	65	5	1701	33	5	1755	30	1	1809	97	4
1648	75	6	1702	26	2	1756	40	1	1010	106	5
1649	71	1	1703	32	0	1757	53	4	1811	95	3
1650	68	1	1704	41	4	1758	44	5	1812	126	6
1651	65	2	1705	26	8	1759	35	3	1813	109	9
1652	44	0	1706	23	1	1760	32	5	1814	74	4
1653	31	6	1707	25	4	1761	26	9	1815	65	7
1654	23	1	1708	36	10	1762	34	8	1816	78	6
1655	29	7	1709	69	9	1763	36	1	1817	96	11
1656	38	2	1710	69	4	1764	41	5	1818	86	3
1657	41	5	1711	48	0	1765	48	0	1819	74	6
1658	57	9	1712	41	2	1766	43	1	1820	67	10
1659	58	8	1713	45	4	1767	47	4	1821	56	1
1660	50	2	1714	44	9	1768	53	9	1822	44	7
1661	62	2	1715	38	2	1769	40	7	1823	53	4
1662	65	9	1716	42	8	1770	43	6	1824	63	11
1663	50	8	1717	40	7	1771	47	2	1825	68	6
1664	36	0	1718	34	6	1772	50	8	1826	58	8
1665	43	10	1719	31	1	1773	51	0	1827	58	6
1666	32	0	1720	32	10	1774	52	8	1828	60	5
1667	32	0	1721	33	4	1775	48	4	1829	66	3
1668	35	6	1722	32	0	1776	38	2	1830	64	3
1669	39	5	1723	30	10	1777	45	6	1831	66	4
1670	37	0	1724	32	10	1778	42	0	1832	58	8
1671	37	4	1725	43	1	1779	33	8	1833	52	11
1672	36	5	1726	40	10	1780	35	8	1834	46	2
1673	41	5	1727	37	4	1781	44	8	1835	39	4
1674	61	0	1728	48	5	1782	47	10	1836	48	9
1675	57	5	1729	41	7	1783	52	8	1837	55	10
1676	33	9	1730	32	5	1784	48	10	1838	64	4
1677	37	4	1731	29	2	1785	51	10	1839	70	6
1678	52	5	1732	23	8	1786	38	10	1840	66	4
1679	53	4	1733	25	2	1787	41	2	1841	64	5
1680	40	0	1734	30	9	1788	45	0	1842	57	5
1681	41	5	1735	38	2	1789	51	2	1843	50	2
1682	39	1	1736	35	10	1790	54	9	1844	51	3
1683	35	6	1737	33	9	1791	41	7	1845	50	9
1684	39	1	1738	31	6	1792	43	0	1846	54	9
1685	41	5	1739	34	2	1793	49	3	1847	69	5
1686	30	2	1740	45	1	1794	52	3	1848	50	6
1687	22	4	1741	41	5	1795	75	2	1849	44	6
1688	40	10	1742	30	2	1796	78	7	1850	40	4
1689	26	8	1743	22	1	1797	53	9	1851	38	7
1690	30	9	1744	22	1	1798	51	10	1852	41	0
1691	30	2	1745	24	5	1799	69	0	1853	53	3
1692	41	5	1746	34	8	1800	113	10	1854	72	7
1693	60	1	1747	30	11	1801	119	6	1855	74	9
1694	56	10	1748	32	10	1802	69	10			

—*Journal of the Royal Agricultural Society.*

LADY-DAY CORN AVERAGES.

Sir,—For the information of your agricultural readers, I beg to state that the average prices of Wheat, Barley, and Oats in England and Wales, for the 52 weeks ending the 22nd March, 1856, are as follows, viz.:—

Wheat......75s. 4d. per imperial quarter.
Barley......35s. 11¾d. „ „
Oats.......27s. 2½d. „ „

I annex the weekly averages from the *London Gazette*, as they may be useful for future reference.

I remain, Sir, your most obedient,
Charles M. Willich,
Actuary University Life Assurance Society.
25, *Suffolk-street, Pall-mall, June* 30, 1856.

Weekly Average Prices of Wheat, Barley, and Oats per Imperial Quarter, in England and Wales, for 52 weeks, ending March 22, 1856.

WEEK ENDING	WHEAT. s.	d.	BARLEY. s.	d.	OATS. s.	d.
March 31, 1855	68	7·417	30	5·942	25	6·568
April 7, „	68	5·267	30	8·795	24	11·883
„ 14, „	68	4·254	31	1·266	25	10 972
„ 21, „	68	8 430	31	5·088	25	10·132
„ 28, „	68	4·685	31	6·723	25	9·485
May 5, „	69	5·336	31	3·379	26	0·241
„ 12, „	73	4·003	31	10·778	26	11·514
„ 19, „	76	1·148	32	5·193	27	9·865
„ 26, „	76	10·213	32	11·574	28	1·276
June 2, „	77	7·118	33	2·602	28	2·127
„ 9, „	77	5·609	33	11 158	28	10·564
„ 16, „	77	5·070	34	0·144	28	7·656
„ 23, „	76	7·012	34	3·162	29	3·464
„ 30, „	75	11·224	34	3·137	28	8·035
July 7, „	76	1·365	34	5·613	28	6·265
„ 14, „	75	11·360	34	7·548	28	8·725
„ 21, „	76	4·671	34	8·395	28	5·025
„ 28, „	77	7·487	34	8 645	29	1·590
Aug. 4, „	78	2·783	35	0 216	28	11·708
„ 11, „	77	2·825	34	8·769	29	1·321
„ 18, „	75	9·510	32	2·752	29	1·193
„ 25, „	73	7·528	34	5·055	27	6·826
Sept. 1. „	72	7·120	34	9·342	29	3·327
„ 8, „	74	10 357	35	0·920	28	2·375
„ 15, „	76	9·332	35	3·509	28	6·318
„ 22, „	77	8·814	35	9·834	28	8·204
„ 29, „	77	3·160	36	4·178	28	4·484
Oct. 6, „	76	6·716	37	0·122	28	7·996
„ 13, „	76	7·844	38	4·954	28	6·585
„ 20, „	76	10·449	38	10·366	27	9·879
„ 27, „	78	4·642	38	6·907	28	8·836
Nov. 3, „	80	3·555	39	0·317	28	0·933
„ 10, „	80	5·345	39	6·016	28	4·913
„ 17, „	80	10·433	39	11 070	28	0·045
„ 24, „	82	1 982	40	11·783	28	1·459
Dec. 1, „	83	1·829	42	3·642	28	10·824
„ 8, „	81	6·248	42	5·432	28	6·854
„ 15, „	79	11·885	41	3·169	27	10·090
„ 22, „	78	9·443	40	4·215	27	1·718
„ 29, „	77	2·171	39	4·556	26	11·803
Jan. 5, 1856	76	10·135	39	0·583	26	9·413
„ 12, „	76	2·765	38	3·325	25	11·940
„ 19, „	76	1·883	37	8·465	26	7·178
„ 26, „	76	11·225	38	4 949	25	8·371
Feb. 2, „	75	10·217	38	6·285	25	5·428
„ 9, „	73	8 134	37	5·866	24	6·666
„ 16, „	71	7·836	37	2·207	23	10·295
„ 23, „	69	2·728	35	8·826	23	6·113
March 1, „	69	7 504	35	6 574	23	9·504
„ 8, „	69	11·032	35	11·618	24	1·150
„ 15, „	67	11·269	36	3·878	23	2·241
„ 22, „	67	5·171	37	2·288	23	2 637
	52)3918	2.544	1871	3·130	1415	10·014
Average prices....	75	4·202	35	11·829	27	2·730

ARTERIAL DRAINAGE *VERSUS* WATER POWER.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—I was happy to find, by your paper of the 24th of March, that the subject of the abolition of water power, as the great obstruction to arterial drainage, has been taken up by persons more competent than myself to enter into the details of any plan that may be suggested. When I wrote my letter (dated 1st January, but written some months previous) I was not aware that any other persons had directed their attention to the subject; but I find by your leader that several others had done so before mine appeared, and we only differ upon the extent to which it ought to be carried out. I trust that, now the matter has been fairly brought before the public, it will have a candid and impartial discussion.

I am quite willing to admit your assertion, that the measure I propose would possess "only a *little* more legality and equity than distinguished the suppression of the monasteries by Henry VIII." That "little" consists in remunerating the owners and holders of the water power, whilst it benefits to an indefinite extent both the owners and the country at large. I don't think, however, the cases are parallel in other respects, although this is not the proper medium through which to discuss the difference or dissimilarity. The water power is *not* public property, but belongs of right—both prescriptive and by purchase—to the possessor of the estate through whose property it runs. And as he cannot dam up the stream beyond the ancient boundary, so his neighbour cannot lower it. Before the owner can interfere to extend his power, he must purchase the property, both above and below his own, that can at all be affected by it. In any plan, therefore, for interfering with his rights, the first thing to be considered is whether the general good of the country requires such a measure; and the second, is the question of indemnity for such interference. This is the course of proceeding in the case of railways, canals, roads, and all public undertakings of the kind, and it is quite proper that it should be so; and whilst, on the one hand, no private interest should be allowed to stand in the way of the public good, so, on the other, to deprive a person of his just rights without indemnity, by Act of Parliament, is nothing better than legal robbery.

I certainly am disposed to modify my proposition, so far as to admit the continued existence of water power where it does no injury to the land; and I also think that, provided no undue favour is shown, local commissioners, well acquainted with the subject and the neighbourhood, would be preferable, in carrying out a measure of the kind, to a commission appointed by Government, who would be ready enough to claim the patronage such a commission would involve. The commission, in fact, ought to consist of half agriculturists and half millers and professed engineers of the first celebrity, so as to ensure efficiency and impartiality.

The plan therefore proposed at the close of your leader would meet the case admirably, namely, "a partition of the entire kingdom into drainage districts, self administering, or under the management of representative district trustees, and organized, superintended, and authorized by a central government commission, empowered by an Act of Parliament." To this extent and no further, would it be proper for Government to interfere; for they always do mischief when they take the superintendence of details. I am at a loss to conceive in what respects this plan differs from my own proposition in regard to interference with private rights.

My principal object, however, in writing at this time, is to examine the validity of the *only* tangible objection I have yet heard to the proposition, namely, the increased expense of manufacturing flour by steam instead of water power. If there had hitherto been no steam power used in making flour, there might be some excuse for such an objection, in the ignorance that would then prevail on the subject. But now that steam mills have been in use for forty years, and supply our large towns and cities with the largest proportion of flour that is used, and when even water millers are compelled, by the decrease of power in their streams, to combine steam with water, such an objection can have little weight. As however a multitude of assertions are no proofs, I shall proceed to inquire into this supposed heavy addition to the expense of flour making, which, it is asserted, would raise the price of that article to the extent of from 1s. to 2s. per sack.

First, let us suppose a steam flour mill with an engine of 15 horse power, which is required to drive four pairs of four-feet stones and other gearings. If the Cornish plan is adopted, it will require, according to Sir Robert Kane, only 5 lbs. of coal per hour to the horse power, or 75 lbs. per hour for an engine of 15 horse power. Reckoning twelve working hours per day, this will give 900 lbs., or say 8 cwt. of coals per day. Again, allowing 300 working days in the year, we obtain a consumption of 2,400 cwt, or 120 tons of coals per year. Now, let us see what effect this will have on the price of flour.

4 pairs of stones, at 3 bushels of wheat each pair, per hour, gives 12 bushels per hour, or 144 bushels in 12 hours.

$300 \times 144 = 43.200$ bushels per annum.

Allowing 6 bushels to the sack of flour, we have

$43,200 \div 6 = 7,200$ sacks.

120 tons of coals, at 16s., £96.

Reduce this into pence, and divide by the number of sacks, thus—

£96 × 240d. = 23,040 ÷ 7,200 sacks = $3\frac{1}{3}$d.

The expense of coal therefore on this principle is $3\frac{1}{3}$d. and a fraction per sack. If we allow 6d. per sack, it will leave £84 over to meet expenses of machinery, in excess of what water power might involve.

The following particulars have been given me by a town miller as the results of his own practice. His engine is of 24 horse power, which works 9 pair of four-feet stones, and consumes 2 tons of coals in 24 hours, and grinding 4 bushels of wheat per hour.

Reckoning 300 working days, we have therefore a consumption of 600 tons of coals per annum, at 16s. per ton, or £480.

Thus, 9 pairs of stones, at 4 bushels per hour each, gives 36 bushels per hour—

$36 \times 24 = 864 \times 300 = 259,200$ per annum,

which divide by 6, reduces it to sacks of flour, thus—

$259,200 \div 6 = 43,200$ sacks per annum.

Next reduce the value of the coals to pence, and divide by the number of sacks, thus—

£480 × 240d. = 115,200 ÷ 43,200 = $2\frac{1}{4}$d. per sack.

It will be seen that in the first calculation I have estimated the grinding at only 3 bushels per hour for one pair of stones, and the consumption of coals at 5 lbs. per hour per horse power, which is the maximum of the Cornish system; whilst in the second, which is the actual experience of a town miller, the quantity of corn ground is one-third more, whilst the consumption of coals in the steam mills in London is 8 lbs. per hour; but I have given the practice of the Cornish millers as being the most economical. Coals are dear in that county, which has led the steam engineers to economise that article to the utmost. For the benefit of the London and other steam millers, I extract the following passage from Sir R. Kane's work on the "Industrial Resources of Ireland":—

"In one of the most industrious districts of England, in Cornwall, in the midst of its mineral wealth, there is a want of fuel for steam power to drain the mines. The engineers in Cornwall therefore could not shovel in coals like their brethren in the north. They had the problem distinctly set before them, how much work could be got out of a bushel of coals; and certainly their results have been surprising. The facts were denied for a long time by the Lancashire engine makers; the reports of duty of the Cornish engines were quoted as a mechanical romance. But that is now all passed. I shall describe what they have effected.

"In place of the waggon boiler already noticed, there is used a long cylindrical boiler, perforated by one, two, or even three flues; so that, although on a greater scale, it is not very unlike the tubular boiler of a locomotive engine. Sometimes the fire place is in the centre flue; at others under the boiler. The flue passes also round the boiler, so that a far greater surface of water, in proportion to its mass, is presented to the action of the heat than in the waggon form. The result is found to be that by Mr. Parkes' trials, 1 lb. of coal in a Cornish boiler will evaporate 12 lbs. of water, thus fully giving the result I have taken as the standard. The evaporation of a cubic foot of water from a Cornish boiler will take 5.2 lbs. of coal, little more than one-half of what the waggon boiler, in average, requires, even when well worked. Hence, where fuel is dear, there should be no question of waggon boilers. The *manufacturer who burns 2 lbs. of coal where 1 lb. should be sufficient pays twice as much as is necessary for his power*, which of course must be deducted from his profits.

"But the improvements in the Cornish steam engine are not restricted to a better construction of the boiler. Another is still more remarkable, inasmuch as its principle is much more latent. We have seen that to generate the steam, the elastic force of which represents the horse power, we must evaporate 0.54 (rather more than half) a cubic foot of water. Now this weighs $33\frac{3}{4}$ lbs., and, avoiding minute fractions, we may consider that it might be evaporated in a Cornish boiler by 3 lbs. of coal. In place of 14 lbs., as given by Parkes, or 11 lbs., as taken by Scott Russell, for practice, the theoretic result becomes 3 lbs. This, however, allows no loss for friction in machinery, no loss of motion in transition through the parts of the engine, no waste of steam. Yet all these are sources of loss; and nevertheless they are compensated for in the Cornish engine, and a duty and performance obtained in practice which, when reduced to the horse power, becomes 3 lbs. of coal burned per hour, and even in some instances falls below it; so that the work done, with all friction of machinery, is greater than is indicated by theory, without loss or friction."

This long quotation may seem irrelevant in a paper like this; but the question of expense having been mooted to me by respectable millers, I think it important to disabuse their minds of the erroneous ideas they entertain of the expense of steam power. We consume upon the average one sack per head per year; and surely if the extra 6d. per sack is laid on the flour it would never be felt individually, although in the aggregate it will amount to £700,000. As however one-third of the flour consumed is already manufactured by steam, we may safely conclude that the price will not be altered by the change proposed.

Of the advantages in a national point of view, it is not now necessary for me to say much. They must be patent to every one who reflects on the immense tracts of land now sodden with water, on account of the mill heads. Nor will the millers themselves be injured to the extent of the expense of coal as stated. Whether this plan be carried out or not, the land will certainly be drained to an extent that will every year more and more lessen the water power of their mills, and drive them, in the summer months, to the use of steam. They will therefore act wisely to dispose of their water power whilst it is worth any thing. I may not live to see it, but the subject will certainly be taken up seriously, and will, I have no doubt before long, approve itself to the conviction of every impartial and reflecting person.

Yours truly,
An old Norfolk Farmer.

London, July 3, 1856.

GERMAN WOOL FAIRS, 1856.

Foreign Office, July 11th, 1856.

Sir,—I am directed by the Earl of Clarendon to transmit to you, to be laid before the Council of the Royal Agricultural Society, the accompanying copy of a despatch from her Majesty's Consul-General at Leipzig, enclosing a report upon the wool fairs of Germany.

Lord Clarendon thinks that this information may not be uninteresting to the Society.

I am, sir, &c.,
Shelburn.

The Secretary of the Royal Agricultural Society.

REPORT ON THE LEIPZIG AND OTHER GERMAN WOOL FAIRS OF 1856.

Leipzig, June 30, 1856,

The Leipzig Wool Fair was held this year, as usual, on the 13th and 14th of June, and was well attended, principally by German purchasers. The central situation at Leipzig among the cloth manufactories of Saxony and Prussia makes it a convenient place of resort for wool buyers, though the supply is always small in comparison with the quantities brought to the great fairs of Berlin and Breslau. On this occasion the stock of wool at market was 39,792 stone[*] (7,958 centners), being 14,947 stone more than the quantity of last year's fair. The whole stock, with the exception of 2,925 stone, was sold, and that at advanced prices, varying from half a dollar to one dollar and a-half additional per stone, according to the quality and condition of the wool. The prices obtained per stone were, for

	Dollars.
Fine wools	21 to 24½
Middling fine ditto	18 „ 20
Ordinary ditto	16 „ 18

The clip was both better and more productive than that of last year. In some cases the washing and picking of the wool was found excellent, but there were many lots exceedingly defective in this respect. The wool of middling quality appeared to be in greater demand than the finer sorts, which, indeed, has been the case for several years past.

The Breslau Wool Fair on the 4th of June and following days is stated to have been numerously attended by purchasers from the manufacturing districts of Prussia and the Zollverein, as well as from Austria, France, England, Belgium, and Sweden. The demand in the month of May had been so great that the stock of Silesian wool in warehouse had been completely exhausted before the fair began; consequently the growers had made up their minds to a very large advance in price, which, however, was somewhat counteracted by the results of the last London sales of colonial wool, and by the inundations in France, which, it was thought, must endanger the harvest in that country, and consequently limit the French demand for wool during this summer. The growers, therefore, could not realize the advance of 20 per cent. which they had first tried to obtain, and the less so when it was found that the washing and picking of the new wool was decidedly inferior to that of last year. The rise in the price of good clean wools was, however, as much as from 8 to 12 dollars per centner. The deficiency of weight was generally about 10 ten cent.

According to the official report of the Chamber of Commerce, the quantities brought to this fair were—

	Centners.
Silesian wool	33,000
Posen ditto............................	5,000
Polish, Russian, and Austrian ditto, including the stock in warehouse	3,000
Total......................	41,000

being 3,000 centners less than the quantity brought to market last year. Above three-fourths of the whole quantity was sold; the proprietors of the rest preferred to borrow on a deposit of their produce, and to await the chance of a rise.

The following prices were realized per centner for the different wools sold, viz.:—

	Dollars.
Silesian electoral clip...............	138 to 155
Superfine clip	125 „ 135
Fine ditto	112 „ 120
Middling and middling fine ditto	98 „ 108
Inferior ditto	88 „ 93
One and two shearings rough ...	83 „ 86
Moist and tanners	74 „ 88
Posen fine clip.........................	98 „ 108
Middling and middling fine ditto	85 „ 95

Further quantities of Polish wool were stated to be arriving at Breslau when the fair closed.

In order to facilitate the business of future fairs, and to prevent frauds, a permanent directory of seven merchants has been appointed at Breslau, who are to form a regular wool exchange, and control the brokers in the declaration of prices. The directory will also put itself in connection with the new Agricultural Bank, so as to enable the growers either to sell their produce promptly, or to obtain loans on deposit thereof, when the latter course may be preferred. These measures are likely to increase the attractions of Breslau as a central mart for Polish and Austrian, as well as Silesian wools.

The Dresden Fair, on the 11th of June, rather disappointed the expectations of the growers. The wool, however, was in very good condition, and an advance of from half a dollar to one dollar per stone was realized upon last year's prices. The whole stock brought to market was sold, being under 12,000 stone, or 2,400 centners. Fine wools fetched from 20½ to 24 dollars per stone; middling fine wools from 17½ to 20 dollars per stone; ordinary wools from 15½ to 18 dollars per stone.

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[*] 1 stone of 82lbs. = 32½lbs. avoirdupois.
5 stones „ = 1 trade centner of 110lbs. or 113lbs. av.
1 dollar of 30 groschen = 3s. sterling.

At the Posen Fair the washing of the wools was pronounced excellent, and the deficiency of weight was small. The prices obtained were various; all above those of last year, and in some cases an advance of from 5 to to 10 dollars per centner. Many of the growers refused to sell, and reserved their wool for the Berlin fair. The quantity brought to market was about 6,500 centners, including 1,500 centners in warehouse from last year's stock.

At the Gera Fair, in the principality of Reuss, 7,000 stone, or 1,400 centners were brought to market, being less by one-seventh than last year. Fine clothing wools fetched from 16 to 17¾ dollars, and combing wools 16 dollars per stone, being in both cases an advance upon the prices of the last fair.

At Landsberg, on the Wartha, 8,000 centners of wool were brought to market which fetched higher prices by from 2 to 6 dollars per centner than last year. The washings were reported better than at Breslau.

The Dessau Fair was rather flat, inasmuch as 5,056 stone of wool was brought to market; 2146 stone remained unsold. The washing was, however, very good, and the wool sold realized from 1½ to 2 dollars per stone more than last year.

At the fair of Bautzen, in Saxon Lusatia, 7,698 stone of wool came to market, and 7,006 were sold. The prices ranged per stone for

	Dollars.
Fine wools	19 to 21
Middling to fine ditto	16 „ 19
Middling ditto	14 „ 16
Inferior ditto	12 „ 14

which average a dollar per stone higher than last year.

At the Stettin Fair 27,113 centners of wool were brought to market, or passed through, and nearly the whole stock was sold. Well washed lots fetched from 2 to 4 dollars per centner more than last year, and in some few instances from 6 to 8 dollars more, but a great deal of wool went at last year's prices. The highest price realized for superfine wool was 96 dollars per centner, fine fetched 81 to 92 dollars, middling and combing wools 72 to 78 dollars, inferior 50 to 72 dollars.

At the Magdeburg Fair only 2,110 centners came to market. Prices rather lower than at Stettin. Washings very good.

The Weimar Fair was well attended, and of 38,500 stone of wool (7,700 centners) nearly the whole was sold. The washings were good, in some instances excellent. Prices from 1 to 2 dollars per stone higher than those of last year.

The Berlin Fair, the largest of all the German wool fairs, took place on the 18th of June and following days. The quantity brought to market amounted to 104,000 centners; and there being in warehouse from last year 4,000 centners, the entire stock was about 8,000 centners greater than at the last fair. The weight of the fleeces was, upon the whole, greater than last year, but the washing in many instances was indifferent. The growers began by demanding an advance of 10 dollars per centner, but finding they could not obtain so much, they were obliged to be content with an advance of from 2 to 5 dollars upon last fair's prices. Wherever an advance of at least 2 dollars could not be obtained, the reason lay in the bad washing of the wool.

The actual prices paid per centner ranged as follows—

	DOLLARS.
Superfine wools, from	105 to 110
Fine	93 — 98
Middling fine	82 — 88
Middling	74 — 80
Inferior	60 — 70
Fleece and moist	58 — 70
Locks	55 — 75

The purchasers were chiefly German manufacturers and dealers. The English customers were fewer than at last year's fair. The fair ended firmly, as it is called, that is, with the confidence that the present prices would be maintained for some time to come.

The continued rise in the price of wool is an indication of the activity of the German cloth manufactories, although these establishments are in so far unfavourably affected by the enhanced cost of their raw material. The English dealers have bought unusually little wool at these last fairs, for the rise within the last two years has much more than counteracted the reduction of the export duty from 6s. to 1s. per centner, which took place on the 1st of January, 1854.—*Journal of the Roy. Agri. Soc.*

THE FARMER LAD.

Gay is the life of the farmer lad
That roams o'er the velvet lea,
His mind is contented, his soul is glad,
His spirits as breezes are free;
His breath is as pure as the meadow flowers,
His cheeks are ruddy with health,
Strong is his arm, his bosom is warm;
And virtue he prizes than wealth.

CHORUS.
Merry's the life of the farmer lad,
That roams o'er the velvet lea,
His mind is contented, his soul is glad,
And his is the life for me.

Free is the life of the farmer lad,
No master has he to please,
To whom he need bow when his rent is paid,
But sit and sing at his ease.
And a merry home is the farmer's home,
For he keeps the home-brewed there;
And a welcome for all, in his friendly hall,
For hearty's the farmer's fare.

Sporting's the life of the farmer lad,
With his horses and his hounds,
With his gun in his hand, or angling rod,
He seeks his sporting grounds;
Whilst his snowy sheep on the hillocks bleat,
And his kine bedeck the plain,
And his orchards fair perfume the air,
And gold-like his fields of grain.

Loving's the life of the farmer lad,
When he hies to the market or race
The fair ones go see him unknown to dad,
Whilst a smile beams o'er their face.
For they love to see his laughing eye
Beam forth with amour bright;
And they slily say, I'll gang away
With a farmer, my delight.

Then here's to the farmer and his man,
May they still happy be:
May they still quaff the flowing can,
And live in jollity;
May blighted crops ne'er spoil the hopes
Of the noble sons of toil;
Then to the brim lets fill to him,
The lord of the glorious soil.

—*Irish Farmers' Gazette.*

THE TURNIP CROP, AND ITS ENEMIES.

The letter to the editor of the *Mark Lane Express*, dated July 28, headed "The Black Caterpillar," has induced the following remarks:

It is evident that *two* destructive insects are noticed in the letter, though the writer says that "it was generally suspected that the grubs which destroyed the bulbs were the same as the black caterpillar, but in another stage of their existence." Having myself witnessed one of the most dreadful attacks that any turnip crop could by possibility have sustained (it occurred in Berkshire and Buckinghamshire about the year 1835), I have referred to that excellent work, "Stephens' Book of the Farm," in order to clear up any doubt or ambiguity on the subject; but previous to making a quotation, I must state that, for many miles in extent, the whole of the bulbed turnips were riddled and eaten into holes by a grey and dirty-coloured grub, numbers of which could be seen at once, close to and in the bulbs, by only just moving the earth a few inches below the surface. Experiments were instituted at the time, in order to determine the parents of this voracious larva or caterpillar, and at length it was proved that it was a *moth* of a brownish-yellow tint. I now proceed to justify the foregoing assertions by referring to the "Book of the Farm," vol. ii., page 75. To commence with The Black, Black Caterpillar, Niggers, &c., terms used in different parts of the country. "The parent is called the Turnip Saw-fly (Athalia spinarum): it is not a moth. The female deposits its eggs on the young turnip plants in the early part of summer; they are placed round the outer margin of the rough leaves. In favourable weather they are hatched in a short time. At first these larvæ are of a deep black colour, and of a small size; but they grow rapidly, and in the course of a few weeks attain their full dimensions."

So much for the *blacks*, of which our country "reports" yield but too ample testimony of their presence in many districts. But in respect to the grub which produced the destruction of the full-grown bulbs some twenty years ago, the "Book of the Farm" will prove our most satisfactory authority. It is the larva of a moth called Noctua, or Ægrostis segetum. "In the more advanced state of the turnip it forms a round hole near it, in a vertical direction, about two or three inches deep in the earth. At the bottom of this it remains during the day, unless it be dark and moist, and at night it emerges from the burrow, and commences an attack upon a plant by eating round the neck of it, and eventually detaching the upper part from the root. In this way singled, Swedish turnip-plants may be destroyed one after another, until very few are left."

When, however, ten or more of these vermin assaul a bulb, and thus treat whole fields throughout extensive districts, they make short work of the affair, and the farmer's hopes of the season become entirely blighted. In the garden, my own experience taught me that cabbage or brocoli plants could thus be destroyed in detail, he grub (coiled up in a ring whenever detected) stealing a march to its nearest neighbour, so soon as it had killed the plant by the gnawing of its stem an inch or two below the surface.

Croydon. J. TOWERS.

CALENDAR OF AGRICULTURE.

This month generally concludes the harvest, except in the latest localities. House the grains in barns, or build in ricks; have thatch always ready, and secure them from damage. Beans will be the latest crop: tie with straw ropes into sheaves when cut by the sickle, or with tarred twine, which may be preserved for years. Beans and peas require immediate thatching, as leguminous crops attract and retain much moisture.

Finish the dunging of clay fallows; cart stones and tiles to drains; scour ditches; repair, widen, and straighten brooks and rivulets, and mix the materials excavated with lime for earthy composts. Lay well-prepared composts on grass lands eaten bare, and on lucerne, the surface being first scarified, and then roll it. This preparation raises the first spring crop.

Sow winter vetches on good lands, fallowed and dunged; mix with beans or winter barley.

Plough stubble grounds for next year's green crop fallows, and follow by workings if the season be favourable; the dung may also be applied, which preparations will much further the spring operations, and are very advantageous.

Seed-furrow clay fallows, and sow wheat. Plough grass leys for the same purpose, and press and sow quickly. Scuffle pea, bean, and tare grattans; collect and burn the weeds, and lay on dung. Plough with one furrow, and sow wheat.

Pick hops. The flowers are put into binns, being first cut off by scissors, and are paid by a fixed rate, then carried to the oast and dried, chiefly with coke. Some use sulphur, to give the hops a yellow tinge. The haulm of hops makes good litter. Set the poles erect, and cover till next year.

Keep all live stock in good condition, especially horses, for the wheat-sowing season now at hand.

TO IMPROVE SEED POTATOES.—Charles Seager, of St. Louis, recommends the following easily-tried method of improving potatoes, so as to restore them to the original soundness, richness, and mealiness of this valuable root. The plan is this—"Keep back some seed potatoes for six or seven weeks after the usual time of planting, say till the last week of June or the first week of July, and then plant and cultivate them the same as stock potatoes. They will grow until the frost withers the vines, when they should be dug. As they have not had time to mature they will be quite small—not more than an inch or an inch and a half through; but they should all be carefully gathered, and kept safe from frost through the winter, and planted at the usual time of planting in the spring—one of the small potatoes being sufficient for seed in each hill. The result will be large sized, sound, mealy potatoes, as I have proved by actual trial. I hope that it will be tried by some of our farmers this year."—*American Paper.*

METEOROLOGICAL DIARY.

Barometer.			Thermometer.			Wind.		Atmosphere.			Weath.
1856.	8 a.m.	10 p.m.	Min.	Max.	10 p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
July 22	30.0	29.90	62	78	61	S. S. W.	gentle	cloudy	sun	clear	dry
23	29.81	29.70	56	82	72	S. West	gentle	fine	sun	fine	dry
24	29.69	29.76	62½	74	62	S. West	gentle	cloudy	sun	fine	dry
25	29.87	30.0	58	72	58	West	airy	fine	fine	fine	dry
26	30.06	30.13	54	72	59	West	lively	fine	sun	fine	showery
27	30.16	30.11	52	72	58	West	lively	fine	sun	fine	dry
28	30.07	30.13	55	75	62	Variable.	calm	fine	sun	fine	showery
29	30.21	30.26	58	74	65	S. S. W.	calm	fine	sun	fine	dry
30	30.31	30.31	58	84	68	S. S. W.	gentle	haze	sun	fine	dry
31	30.31	30.22	59	84	70	S. East	airy	fine	sun	fine	dry
Aug. 1	30.27	30.18	62	84	70	East	brisk	fine	sun	fine	dry
2	30.13	30.13	64	84	72	East	brisk	fine	sun	clear	dry
3	30.10	30.12	63	81	71	East	airy	haze	sun	clear	dry
4	30.20	30.21	62	79	65	E. by N.	airy	haze	sun	clear	dry
5	30.26	30.26	55	77	61	N. N. E.	airy	clear	sun	clear	dry
6	30.26	30.11	52	72	62	E. N. E.	gentle	haze	sun	clear	dry
7	30.06	29.97	55	80	65	S. West	gentle	fine	sun	clear	dry
8	29.81	29.70	54	75	63	Variable.	calm	fine	cloudy	fine	dry
9	29.77	29.86	60	73	66	S. West	strong	cloudy	cloudy	fine	rain
10	29.90	29.87	60	82	72	S. West	calm	fine	sun	fine	dry
11	29.86	29.90	63	85	66	S. W. by W.	var.	fine	cloudy	cloudy	rain
12	29 97	30.02	59	76	64	South	fresh	fine	sun	fine	dry
13	30.02	29.97	58	81	66	W. by S.	fresh	fine	sun	fine	dry
14	29.91	29.93	62	76	61	S. W. by S.	fresh	cloudy	sun	fine	showery
15	29.96	30.02	59	73	59	S. W. by S.	fresh	fine	sun	fine	dry
16	30.01	29.83	50	77	61	N. East	fresh	fine	sun	fine	dry
17	29.62	29.50	59	69	62	N. East	fresh	cloudy	cloudy	cloudy	rain
18	29.49	29.44	57	59	57	N. by E.	fresh	cloudy	cloudy	cloudy	rain
19	29.49	29.54	55	60	57	Variable	calm	cloudy	cloudy	cloudy	rain
20	29.51	29.36	56	63	58	South East	fresh	cloudy	cloudy	cloudy	rain
21	29.31	29.42	56	66	56	South	fresh	cloudy	fine	fine	rain

ESTIMATED AVERAGES OF AUGUST.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.26	29.35	82	41	61.6

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
75.92	57.9	65.57

WEATHER AND PHENOMENA.

July 22. Splendid summer-day.—23. Lightning, after great heat.—24. Great clearing, fresh clear day; as on the 25th also.—26. Some thunder and a sprinkle of rain.—27, 28. Showery, cross currents.—29 to 31. Fine hot weather.—Total fall of rain in the month: 1 inch 715 parts. That is nearly five inches less than fell in 1855.

LUNATIONS.—Last quarter, 24th, 3h. 1m. aft.; new moon, 31st, 9 h. 8 m. evening.

August 1 to 8. Superbly fine and maturing.—9. Rain commences, with strong S.W. wind.—10, 11. Oppressive, hint of rain.—12, 13. Hot and fine.—14. Much rain.—15. Fine.—16 to 19. Cold N.E. winds and showers.—19, 20, and 20th night. Profuse rains.—21. Rain early, but clearing after noon, calm.

LUNATIONS. — First quarter, 9th, 0h. 22m. morn; full moon, 16th, 5 h. 55 m. morn.

REMARKS CONNECTED WITH AGRICULTURE.

The great fall of rain, amounting to more than 2.10 in. since the 9th August, has been of immense service to the latter grass, and all the root crops; though it must be admitted that much corn in sheaf has been exposed to a pitiless drenching during the last three days. No serious damage will result from this, provided the weather take up. Reaping simultaneously began most successfully, and vast quantities of wheat, and some oats, were safely stacked and otherwise housed. Our locality is somewhat in arrears of other districts, and much requires to be done ere Surrey can claim a first-rate standing.

Croydon, Aug. 22. JOHN TOWERS.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

Owing to the immense quantities of rain which have fallen in all parts of England during the greater portion of the month, harvest operations generally have received a severe check; indeed, we scarcely ever recollect so little corn to have been secured in August as during the month just concluded. Up to the present time, not more than one-fourth of the grain has been carried, and there is every indication of the harvest being an unusually late one. Had it not been for the almost continuous rains, we should have had a splendid growth of wheat as to quality, and the farmers who were fortunate enough to secure their produce prior to the 20th obtained a very fine sample. Those who have commenced cutting late are likely to have far better quality than those who cut their corn shortly after the rains had set in. That the condition of the whole crop has suffered materially, no doubt can be entertained; on this point, indeed, there are scarcely two opinions; but, as respects the total quantity grown, we have received unfavourable, in other instances gratifying, reports. We ourselves have had an opportunity of travelling over some of the best, and much of the worst land in this country; and the result of our observations and inquiry enables us to state that the crop, as to quantity, is much underrated. We have seen five quarters to the acre grown upon only middling soils, and three quarters upon land rented at 7s. per acre. Our decided conviction is, therefore, that the yield of wheat in this country is a fair—perhaps we may say a full—average one. The yield of barley, too, is unquestionably large in quantity, but it is very deficient in colour; consequently, this article—especially as the breadth of land under culture this season is unusually small—is likely to be selling at very high rates for a considerable period. Oats, beans, and peas are a large crop, and have come to maturity much earlier than in the general run of years. As regards the actual amount of damage done to the wheats, the most exaggerated statements have been set afloat. Some correspondents inform us that the whole crop in many localities has become sprouted, consequently spoiled. Now, no good can result from such statements; on the contrary, they are frequently productive of much injury to the farmers' interests. It is true that we have seen sprouted wheat; but the instances are so rare that we conceive them to have very little influence upon the aggregate yield. The crop that has suffered most is barley, which, we believe, has lost much of its malting quality. In the last week in the month, the quantity of grain carried was immense, and some growers, taking advantage of the favourable change in the weather, thrashed out freely in the fields.

The quantity of wheat, and, indeed, all other grain of last year's growth now on hand, is very limited; in point of fact, in some counties scarcely any spring corn remains. This fact must exercise considerable influence upon the trade for many months. We may have large importations from abroad; but when the extent of our consumption is considered, and the rapidly increasing wants of other countries are taken into consideration, it is a question whether more corn has been grown in the world than can be readily consumed. We do not imagine that we shall have higher prices than at present; but he rapid progress of trade and commerce, and the full employment afforded to our labouring population, incline us to the opinion that the value of agricultural produce will continue to rule high, on comparison with those seasons prior to the commencement of hostilities with Russia.

Our advices respecting the potato crop continue favourable. Dry and warm weather, however, is now much required to bring it to maturity, and make it a good keeping root for winter consumption. The haulm in some districts presents a dry shrivelled appearance; yet we find that, with very few exceptions, the tubers are tolerably free from disease. Immense quantities have been on sale in the whole of our markets. As they have considerably exceeded the demand, prices have ruled low, viz., from £2 15s. to £4 4s. per ton.

The whole of the hay crop has now been carried, and we may state that it has proved the largest, perhaps the best, ever grown in this country. This is an important circumstance, as it will enable our graziers to furnish their stock with an abundant supply of good food during the winter months.

As regards the turnip crop, great fears were at one time entertained that it would be lost; but the rains have had a wonderful effect upon it, and there is every prospect of a large return, though we much doubt whether it will equal last season.

The colonial wool sales have been brought to a close, and over 80,000 bales were disposed of. There is a better feeling in the inquiry for home-grown qualities—which, fortunately, have not been pressed for sale—and prices continue firm.

We have, at length, to report a falling off in the demand for linseed, and, with it, a slight reduction in prices. The supply of that article, however, in first hands, is still very moderate.

The cattle trade has been tolerably firm throughout the month; but we have very little change to notice in prices.

Harvest operations, both in Ireland and Scotland, have made very slow progress. The shipments of grain to England have been trifling, and no doubt they will be small for some time.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the demand for most kinds of stock has been much less active than in the previous month, a good consumptive business has been transacted at full prices. The arrivals of both beasts and sheep into London from Lincolnshire, and some other parts of England, have been chiefly in poor condition; consequently prime animals have continued scarce, and comparatively dear.

In reference to the imports of foreign stock, we may observe that there has been an increase in them; nevertheless, for the time of year they have proved very moderate. No doubt the high range of value in our markets, and the immediate returns, have tempted the Dutch graziers to forward larger supplies; but we believe that the leading cause of the increased arrivals is the fact that the demand for France in most parts of Holland has fallen off. The general weight and condition of the foreign stock have not improved, yet sales have been readily effected. Our advices from Spain and Portugal are very unfavourable as regards exports of cattle. In those countries great scarcity exists, notwithstanding that the harvest is represented as having turned out favourable, and the prices of all kinds of provisions are unusually high. We cannot, therefore, anticipate arrivals from those quarter during the remainder of the year.

In the early part of the month, great fears were entertained respecting the safety of the turnip crop. In the large agricultural districts, and more especially in Scotland, the plant was rapidly falling off; indeed, many farmers had determined, seeing the impossibility of producing anything like a moderate return, to apply their land to other purposes; but the copious showers which have since fallen, and which have checked harvest operations, have had a most favourable influence upon the crop of turnips, and which may now be considered fairly out of danger. We believe, however, that the growth will not be a large one. The moist atmosphere has checked the demand for linseed as well as for cakes, and prices have been with difficulty supported. The imports of the former have been but moderate, considering that this is the period when we usually receive large supplies from Russia; nevertheless, that future imports will be extensive, and equal to the demand, no doubt can be entertained. There is, we may observe, very little chance of any material fall in the quotations, because we find that the use of linseed is daily becoming larger, not only for agricultural, but likewise manufacturing purposes. The high value of cattle of late years has given an immense impetus to the production of linseed; so much so, indeed, has the growth increased, that the aggregate yield is estimated at fully one-third more than it was ten years since. With all this, there is no accumulation of stock, and imports are taken off as fast as they arrive.

The hay crop has turned out one of the largest ever known. There is no county we could name that is exceptional in this respect. The pastures continue well covered, and the stock is doing remarkably well. As regards the future, therefore, the prospects of our graziers are cheering, more especially as consumption is likely to increase, under the influence of great activity in the trade and commerce of the world.

The total supplies of stock exhibited in the Great Metropolitan Market have been—

Beasts	21,271	head.
Cows	490	„
Sheep and Lambs	147,250	„
Calves	3,354	„
Pigs	2,875	„

STOCK SHOWN AT CORRESPONDING PERIODS.

	Beasts.	Sheep and Lambs.	Calves.	Pigs.
1852......	21,049	165,770	3,350	2,785
1853......	24,345	172,102	3,431	2,990
1854......	21,384	164,920	4,286	3,870
1855......	20,816	151,870	3,356	4,272

Since we last wrote, about 9,800 shorthorns have come to hand from Lincolnshire, Leicestershire, and Northamptonshire, 2,900 of various breeds from other parts of England, 165 Scots from Scotland, and 968 oxen from Ireland—the latter *via* Liverpool.

The imports of foreign stock into London have been as follows—

Beasts	5,677	head.
Sheep	17,801	„
Lambs	1,271	„
Calves	2,301	„
Pigs	1,901	„

At the outports, chiefly Hull, about 9,000 head of all kinds of stock have been reported.

The annexed return shows the importations at corresponding periods—

	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1852......	5,316	23,632	3,576	2,867	1,856
1853......	4,929	22,436	2,579	2,908	2,055
1854......	5,507	19,770	1,178	2,495	2,176
1855......	5,941	22,605	984	2,484	3,476

Beef has sold at from 3s. 2d. to 5s.; mutton, 3s. 4d. to 5s. 2d.; lamb, 4s. 8d. to 6s.; veal, 3s. 6d. to 5s.; pork, 3s. 4d. to 4s. 8d. per 8lbs., to sink the offal

COMPARISON OF PRICES.

	Aug., 1853.				Aug., 1854.				Aug., 1855.			
	s.	d	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef, from	3	0 to	4	6	3	2 to	5	0	3	10 to	5	4
Mutton ...	3	4—	5	0	3	4—	5	0	3	6—	5	2
Lamb	4	6—	6	0	4	2—	5	6	4	8—	6	0
Veal.........	3	4—	5	0	3	2—	4	6	4	4—	5	4
Pork	3	0—	4	0	3	4—	4	8	3	6—	4	6

Rather increased supplies of each kind of meat have been on sale in Newgate and Leadenhall. The trade, however, has ruled steady, at full prices. Beef, from 2s. 10d. to 4s. 6d.; mutton, 3s. 2d. to 4s. 8d.; lamb, 4s. 4d. to 5s. 6d.; Veal, 3s. 4d. to 4s. 6d.; pork, 3s. 2d. to 4s. 8d. per 8lbs., by the carcase.

DURHAM.

Since we last wrote, and up to the 7th inst., the weather was intensely hot and sultry. Hay was secured in the finest condition, at a very light expense, and crops very abundant—indeed we have not experienced such a hay harvest for some years. It has been difficult to procure mowers at very exorbitant wages. With a scorching sun during the day, and heavy dews every night, the corn progressed more than we could possibly anticipate. When we last wrote we stated it would be a late harvest; but from the extreme forcing weather which we have experienced, we now have cause to alter our opinion, and should the season prove fine, in the early districts harvest will be pretty general in about a fortnight. It is very satisfactory in having to state that the wheat is superior to last year's crop—the ear is large and well filled, the straw is healthy and strong, and is quite free from mildew and other disease. It is necessary to observe that we have noticed a large breadth of spring wheat sown upon light sandy soils after turnips, and the crops are extremely promising. A few years ago wheat upon this description of land generally proved a failure, it being more adapted for the culture of barley. We imagine that the success of the former crop may be attributed to the frequent application of guano, and other artificial manures, for the turnip crop, that has been so productive of such beneficial results to wheat upon such description of soil. A small breadth of barley was sown; it is early, quality superior, and the crop very promising. Oats are an average crop, promises a good yield, and good quality. Peas and tares are a heavy crop; and beans are well spoken of. On the 8th and 9th inst. we had a deluge of rain. Since, we had frequent awful thunder storms, with torrents of rain. The green crops suffered severely from the intense drought, but the late frequent and copious rains have been of the greatest service to crops in general. Turnips that appeared so sickly and stunted are now healthy and vigorous. Potatoes were very small, and lost their colour: the genial rains have restored them. They are quite free from disease at present, but we must not be too sanguine. The rain has been highly beneficial to pastures and fogs or aftermaths. The cold spring has prevented stock from grazing, and pastures have been short of keep, and graziers have not been remunerated. Good short-horned heifers and steers are very scarce and dear. Our fat stock markets have had a downward tendency. The lung disease amongst cattle has been very prevalent and fatal, and many farmers have sustained great losses.—Aug. 21.

MID AND NORTH BUCKS.

On the conclusion of one of the best hay crops on record, and secured in the finest condition, harvest commenced under very favourable circumstances, with a prospect of more than an average crop, the writer having inspected the crops closely from the Chilton Hills to the borders of Northamptonshire, which embrace a variety of soils, some very cold; and the conclusion come to is as as follows:—As to quantities per acre, wheat 28 bushels, barley 36 bushels, oats 40 bushels, beans 32 bushels. About half the wheat is cut, none carted. Some barley and oats cut; a few of the latter carted; and up to Saturday the 16th inst. the weather was fine, and the prospect of securing the corn a pleasant one. At that date the weather changed, and rain has fallen in torrents almost without interruption ever since, save this evening of the 21st; and if it continues a few days longer, serious damage must be the consequence. The writer has seen statements in the newspapers, giving a description of the crops in this district, stating some as average, some over, and some under, without attempting to give quantities. Such statements cannot be of any use, as no information can be gathered therefrom, and is the cause of this article being written, and figures given as above. The larger portion of the swede turnip crop are thin and late. Common turnips promise to be good, also mangel. The pastures are full of keep, and stock of all kinds doing well.—Aug. 21.

NORTH NORTHUMBERLAND.

Six weeks ago, we ventured to report on growth and appearance generally of the crops over this northern district—since which era of time, a summary of weather has been experienced remarkable for the characteristics of summer and autumn. Up to the last week in July, cold, wet, and ungenial. From the 30th to the 8th inst., most intense heat, followed by three days and nights of dark, dense sea fog. Hence thunder and rain, with intervals of sunshine up to the 16th, when a cold, withering sea breeze set in, which continues to increase in bitterness up to the moment we write. As might be expected, the genial heat on the first days of the mouth caused a pleasing and almost magical effect on the growth of the turnip plant, which, up to the last few days, promised fairly to be a full crop. The thinning process proceeded rapidly, all hands on the farm being almost exclusively at the hoe. In their tender stage of maturing, the cold withering winds of this week have completely checked the late plant. Early-sown swedes, imperials, and part of globes, with other varieties, are closed in on the drill, and will suffer less. Potatoes on exposed situations, and even in gardens, are withered down. It must also be confessed that disease in that valuable (though perishable) esculent is more or less prevalent over the entire district. The breadth planted being more extensive than usual, we trust a full quantity for the supply of the population will be gathered. The season for working and cleaning naked fallows has been tedious, mostly done by catch work; and many fields will receive a middling preparation for the seed. The weeks of the harvest must be attended to, and a late autumn working in our variable climate seldom has a beneficial effect in the extirpation of weeds, or other filth. The most important inquiry, "the state of the cereal crops," we really answer with less than usual fortitude. Our inquiry and personal inspection have been unusually extensive, far exceeding the limits of our district; but to the latter our brief remarks only apply. Over Norham and Islandshire some very fine fields of wheat, barley, and oats are to be seen; but whenever we approach a cold bottom, the crop is weak and thin of plant. Glendaleward, as usual, will reap bulky crops of spring-sown wheat; barley and oats various. The best crops much laid and twisted. Part of Coquetdale, up the Till river and the vale of Aln, barley and oats, on well drained or naturally dry soils, good. To the south, and towards Morpeth, a good piece of wheat, barley, or oats is the exception; and we are sorry to see the report of a respectable valuator from that locality, who puts the expected yield at a low figure. Returning to the north by the coast, Bamburghshire will cut a good bulk of all the cereals; oats the most variable. Wheat generally a fair average bulk. Not a sheaf yet reaped. The best crops all lodged down, with considerable defect in the ear, which we attribute to the cold, ungenial weather in the blooming season. Barley on all the best soils bulky, and much laid. It is difficult to estimate as to averages. With the improved system of cultivation and extra manures, our customary average ought to increase annually; but a deficit in the filling process of the ear cannot be estimated by the most expert observer, until proven on the thrashing floor. Last season deceived us more than any crop estimated for many years; a great bulk, straw fine and bright, and not a sheaf wasted by bad harvesting. The result on the barn floor proved the fallacy of harvest calculation. On a farm where about 170 acres white crop is annually reaped, for all the cereals, wheat, barley, and oats, taking five years, during 1851-2-3 4-5, the yield of crop '55 was, in round numbers, 176 quarters less than the average, and the finest crop in bulk ever reaped.—Aug. 22.

WEST GLOUCESTERSHIRE.

The very decided, and it is to be feared, serious change, which has taken place in the weather since the last report was posted, calls for another communication at an earlier date than usual. The time has now arrived when the labours of the agriculturist, and the hopes and fears of the nation, whose interests are intimately blended together, are about to be determined. It is a source of unqualified regret that during the last fortnight most unfavourable changes have taken place; and as the condition of the elements appears to have varied considerably in different parts, a comparison with that of one of the midland counties and this district affords the best means of accurately informing the public on this important subject. On Thursday, the 7th, a heavy thunder-storm, the rain falling in torrents, is reported to have visited Nottinghamshire; but nothing of it was experienced in the western portion of this county. On the 9th a considerable quantity of rain fell in Gloucestershire, refreshing and acceptable; but this does not seem to have extended to the county referred to. Refreshing showers fell on the 11th; and on the succeeding day we had much heavy rain, which laid the wheat very considerably. This is not mentioned in Nottinghamshire, or any other downfal till the 16th, when a steady rain fell; but that was not experienced here, with the exception of slight showers in the morning. On the following day (Sunday) it rained in torrents. The 18th was dull and cloudy, with slight showers; and on the 19th and 20th it rained heavily. The 21st, fair; but with occasional gleams of sunshine, sadly prejudicial to the grain which had been cut, but not carried—inducing it, in its saturated state, to spirt. Of the changes in Nottinghamshire since the 16th there is no information. The present appearances indicate rain, and the atmosphere is cool. With this very great change, the brilliant prospects which were indicated a fortnight since are completely reversed. A considerable quantity of wheat has been cut in the most forward situations, much of which would have been fit to be carried on the 18th, but which the rain of the previous day prevented. That which is not cut is, in many places, laid to an extent which cannot fail to be injurious, both as respects quantity and quality; and there is more blight apparent than there was any reason a few weeks since to anticipate. These remarks refer, principally, to the vale extending along the course of the Severn from Bristol to Gloucester. On the hills, which it must be observed are more exclusively arable, the grain is not in so forward a state, and harvest, not having commenced generally before the wet weather intervened, has of necessity been procrastinated; should, however, a recurrence of fine weather ensue, there is a possibility of its being secured in fair condition; but existing appearances are by no means favourable. The fluctuations in the markets during the present month have been somewhat in accordance with the weather, although not entirely regulated by that cause. The liberal importations of foreign corn, especially from Russia (from whence but little was expected), induced a rapid decline, which has, to some extent, submitted to a reaction in consequence of the unfavourable appearances of the present harvest. No reasonable doubt can subsist that large quantities of grain will continue to come in from the Baltic, and other quarters; and the general outcry of "the small quantity of old wheat in the hands of cultivators" must be received with caution. That it does not amount to an average at this period of the year, may be admitted; but in this district it is, so far as inquiries can determine the fact, nearly so. At all times it is only the agriculturist of capital and enterprise who can afford to hold a stock; and most of them have some in store. The opponents to legislation on agricultural statistics have little to congratulate themselves upon; and next year they will find they will have still less: with a precarious and uncertain harvest, as the present *has* unfortunately become, it is of the utmost importance to the cultivator to be in a position that will enable him to judge whether it will be most prudent to hold or to realize, and the variations of the elements present a most important feature in this argument. A farmer residing in Gloucestershire may form a tolerably correct opinion as to the general condition of the crops in his own county and neighbourhood; but he cannot exercise his judgment to a similar extent concerning the crops in Yorkshire, Lincolnshire, Cambridgeshire, and other distant counties. Without exposing the affairs of any individual, a well-organized system of agricultural statistics would be a boon of the utmost value. Gloomy as the present prospects of the harvest are, it is consoling to remark that the recent rains have had the most beneficial effects on the pasture-lands, and also upon all descriptions of roots; and should a favourable change speedily take place, a great bulk of grain may yet be secured in good order. We have now a finer afternoon, with some appearance of a favourable change.—Aug. 22.

SOUTH HERTFORDSHIRE.

When we last wrote you, we stated that we were suffering from excessive heat and drought. A speedy change took place in the weather; and although we have not had *excessive* rains (for our springs are very low, and our ponds still short of water), the daily showers and nightly rains for the last seven days have made us most anxious about the corn, which in many instances we fear is irreparably injured. The 16th instant was a fine day for harvesting corn, and all the forward wheat in our vicinity was well carried on that day. Yet the quantity is trifling in comparison with the corn left in the fields, and uncut. We regret to say that we have both seen and heard of much barley terribly sprouted. One piece we noticed on a dry gravelly soil, with small hedges, and free from trees; yet five ears out of six were sprouted. Wheat is only partially sprouted, but much injury is done where the fields are surrounded by high hedges, and where there are many trees. We are great advocates for bagging and tying corn; and our oats are all cut and in shocks, or they must have been much injured. A well-known nobleman not far from us has used M'Cormick's reaping machine. We fear it has done too much work for him, the men not being able to get the corn tied up after it, before the wet weather set in, and much damage to good corn must be the consequence. In a showery or wet season, no plan beats the bagging by hand, and if quite dry, to have the sheaves tied up at once. Some men, however, do the farmer great mischief by tying the corn up when it is not dry, or moist with dew—a system which every farmer should carefully guard against. We have seen very good samples of new wheat, both white and red. The condition of the white wheat was good, and sample fine: the red wheat was in fair order, rather coarse, weighing 62lbs. per bush. Winter oats are well secured, and are a good sample. Some spring oats were carried before the wet set in, but only a small quantity. We have heard of no barley being harvested, though some will be well got on Monday next, if the weather prove fine. Swedes and mangolds have grown famously the past week, and the pastures have also much improved. The suspension of the Hemel Hempsted and Watford Bank (Messrs. Smith and Whittingstall's) has caused serious inconvenience to many farmers and small tradesmen, several of whom parted with £5 notes for £4, to raise money for wages, &c. In the neighbourhood of Watford, Mr. Marjoribanks, of Bushey Grove, with true kindness has given Bank of England notes for Hemel Hempsted notes to all small farmers and tradesmen of good character, who were likely to be distressed by holding the latter notes. We are glad to hear that the Bank is likely to pay 20s. in the pound, and that Mr. Marjoribanks will be no loser in pocket by his considerate kindness to his poorer neighbours.—Aug. 23.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

APPLEBY FAIR was thinner than we have been in the habit of noticing it. Lambs of a good quality were readily sold at good prices, but the smaller sorts were a drug. Ewes also were slow and not much done amongst them. The cheese fair was brisk, and the farmers' wives got good return for their labours, both for new and old milk cheese.

ASHBOURNE FAIR was not overdone with cattle, and the best sorts of barren and in calved cows were in good request, while others were flat sale. There was a better supply of fat beasts; sales rather flat, owing to the fair being on Saturday. In the sheep fair there was a poor supply of fat sheep; the demand for them good. Store lambs were better sold. The horse fair was also better supplied than of late; useful horses were well sold, fillies flat sale.

BANBURY MONTHLY FAIR.—The sheep market was very fully attended, there being about 4,000 or 5,000 penned, the show of stores and rams being particularly good; stores fetched from 40s. to 45s. There was no great supply of mutton, the trade in which was not so good: quotations ruled from 4s. 6d. to 4s. 8d. The beef trade was not quite so good, prices ranging from 4s. 4d. to 4s. 6d. per 8lbs. The horse fair was as well supplied as it usually is at this time of the year, and not much doing.

BEDALE FORTNIGHT FAIR.—We had a good supply of beasts and sheep, both fat and for holding. Sales were easily made, though rates were slightly higher. In-calving cows sold freely, at good prices. Beef, 6s. 9d. to 7s. 6d. per stone; mutton, 7d. per lb.

BRITFORD FAIR.—Last week we gave an account of this fair; we now append the prize-list. AWARD OF PRIZES: A piece of plate, of the value of seven guineas, for the best 100 wether lambs, bred by the competitor, and not having been fed on any artificial food, to Mr. James Rawlence, Bulbridge, Wilts. A piece of plate, of the value of five guineas, given by the Right Hon. Sidney Herbert, M.P, for the second best 100 wether lambs, on the same condition as the former prize, to Mr. Elias Squarey, Odstock, Wilts. A piece of plate, of the value of five guineas, given by Major-General Buckley, M.P., for the best 100 wether lambs, from a flock not exceeding 400 ewes, bred by the competitor, and not having been fed on any artificial food, to Mrs. Gwyer, Downton, Wilts. A piece of plate, of the value of five guineas, given by Lord Viscount Folkstone, for the best Hampshire Down ram of any age, to Mr. Pain, Houghton. A piece of plate, of the value of five guineas, given by F. J. E. Jervoise, Esq., for the best pen of 10 Hampshire Down ram lambs, to Mr. Spencer, Hindon, Wilts. A piece of plate, of the value of five guineas, given by Messrs. Attwater and Tabor, to the person who shall pen the largest number of sheep for sale, to Messrs. Strange, Hazelbury Bryan, Dorset.

CARNWATH LAMB FAIR.—There was an unusually large supply of lambs, chiefly blackfaced, with a sprinkling of whitefaced, Cheviots, and crosses. There was a good attendance of dealers, chiefly from the north. Business on the whole was exceedingly dull. Buyers were unwilling to purchase at the prices asked; and many holders, rather than submit to a reduction, preferred to await the result of Auchinleck fair on Tuesday next. The consequence was that the greater portion of the stock, at the close of the market, remained unsold. One dealer from Muirkirk had 21 score of Cheviot lambs on the ground, and another dealer from Ayrshire had 16 score of whitefaced, the whole of which were driven off unsold. What business was done was at a reduction of from 1s. to 2s. a-head below the rates of last year. We have been informed that the top price of the market was £11 per score for a lot of blackfaced ewe lambs; and prices ranged from this figure down to £5 per score.

DUMBARTON FAIR.—There was a very large turn-out of farmers, dealers, and others, and we have seldom seen a more numerous display of cattle at this fair, the best descriptions of which met with purchasers at good prices. Superior milk cows brought from £10 to £12; feeding cows from £5 to £7, and two and three-year-old stots from £6 to £10.

GLOUCESTER MONTHLY MARKET.—The supply of cattle and sheep was very limited for the time of year, and also generally of an inferior quality. Purchasers were numerous, and high prices were obtained. Beef, from 7d. to 7½d.; mutton, 7d. to 7½d.; lamb, 8d. per lb.

HORNCASTLE SHEEP FAIR was very well attended, there being a large show of lambs and sheep, for which very fair prices were obtained; middling lambs fetched 27s. and 28s. each.

IRVINE HORSE FAIR.—There was but a limited supply of all descriptions, and prices ruled very high; the disposition of sellers being, as a farmer informed us, to keep up war prices. Of first class horses there were few in the market, and of these the prices ranged from £40 upwards. An inferior class brought from £23 to £35, while the majority of those present ranged from the above lowest figure down to the lowest at which horse-flesh is rated.

KENDAL FORTNIGHT FAIR.—There was a large number of all descriptions of stock—fat and lean cattle, calvers, sheep and lambs, and a few calves—for all of which there was a good demand at very fair prices. Beef, 6d. to 7d.; sheep and lambs, 6d. to 6½d.; veal, 5½d. to 6d. The show of "fresh" lean stock, for grazing "out," on fog, was very large, and met with a ready market, at fair remunerative prices; the same may be said of calvers. The market was well cleared off at its conclusion, a very few remaining unsold at its close.

MELTON MOWBRAY FAIR.—There was a good attendance of buyers, and a full average of stock of every kind, both English, Irish, and Scotch, which realized good prices. Beef 6d. and 6½d., and mutton 6d. to 6½d. per lb. Of horses there were some very useful ones, which sold readily at good prices.

MUIR OF ORD MONTHLY MARKET.—Prices were in favour of the buyer; and the transactions which took place generally evince a tendency in the price of all descriptions of stock to decline. Market quotations in the south, and the present state of the country, must have prepared sellers to anticipate such a change, and at the Muir sheep may be said to have fallen as much as 2s. per head, and fat cattle 25s. per head. The number of cross cattle was considerable, though few lots were in very good condition. In Highlanders little or nothing was done. There were few buyers from the south present; and their absence may in a great degree be attributed to the state of the southern markets, the high prices sought for cattle, and the scarcity or doubtful state of the turnip crop generally. In the horse market there was a numerous display of animals of inferior quality; and for those of a better description, large prices were asked, and generally given.

NEWENT FAIR was well supplied with stock of all descriptions, but things hung heavily on hand, particularly poor stock, owing to the scarcity of keep. Mutton 7d., beef 7d. per lb. In the horse fair little or nothing was done, the animals exhibited being of a very inferior quality.

NEW ROMNEY FAIR.—22,318 sheep and lambs were penned—a larger number than was ever offered for sale at this fair before. Considering that keep is very plentiful this season, it appears somewhat surprising that so large a number of sheep and lambs should be penned; but a great many were sent from the hills, owing to the discontinuance of Tenterden Fair, to which they would probably have been sent, had it not been given up. Although the number of sheep and lambs for sale was unusually large, the attendance of buyers was somewhat small; and the consequence was, that trade was dull, and a large number remained unsold. There was a numerous supply of horses on offer; but their quality was not first-rate, and but very few changed hands. The show of beasts was exceedingly small. The number of lambs sold is 5,574, in 62 lots, averaging 22s. 0¼d. each; 870 ewe tegs, in 13 lots, averaging 4s. 2d. each; 827 wether tegs, in 13 lots, averaging 33s. 7d. each; 1860 old sheep, in 28 lots, averaging 31s. 8d. each; 30 two-year-old wethers, in 2 lots, averaging 57s. each; 8 maiden barrens, at 48s. 6d. each—making a total of 9,170 sheep, sold in 119 lots. Average price of lambs, up to two o'clock, in each year, from 1837 to 1856: 1837, 16s. 5d.; 1838, 18s. 0½d.; 1839, 19s. 4d.; 1840, 17s. 9d.; 1841, 19s.; 1842, 15s. 1d.; 1843, 16s.; 1844, 16s. 3d.; 1845, 21s. 1d.; 1846, 20s.; 1847, 28s. 8d.; 1848, 22s.; 1849, 17s. 9d.; 1850, 17s. 1½d.; 1851, 16s. 1d.; 1852, 17s. 8d.; 1853, 21s. 8d.; 1854, 22s. 7½d.; 1855, 22s. 4d.; 1856, 22s. 0¼d.

PAISLEY FAIR.—The attendance of dealers was not large and the quality of the stock scarcely up to the average. A few first-class draught horses were on sale, but by far the largest proportion of the stock were inferior animals. The show of milch cows was rather meagre, and sales heavy. First-class draught horses sold as high as £50; second-class, from £25 to £40; inferiors at all prices. At the close of the market a good number of animals remained on hand.

TEWKESBURY FAIR was pretty well attended. There were a great number of sheep penned, but not much of a show of cattle. Meat was sold much lower than last month. Beef, 5d. to 6½d.; mutton, 6d. to 7d per lb.

THAXTED LAMB FAIR.—The market, although not so extensive as in some years, was in excess of the demand; and, in consequence of the shortness of feed, the trade ruled exceedingly dull.

YORK FORTNIGHTLY MARKET.—Calving and dairy cows were in good demand, at improving prices. A good supply of lean beasts had slow sale, at lower rates. Fat beasts were about equal to requirement, at from 6s. 6d. to 7s. 6d. per stone. Mutton sheep were in fair supply at from 6d. to 6½d., and very prime 7d. per lb. Grazing sheep were plentiful, but they had slow sale at heavy rates.

BISHOPSTOKE CHEESE MARKET.—The supply was large, and the trade dull, although there was not much cheese left unsold. Prices 2s. to 3s. lower than last market.

GLASGOW, (Wednesday last.)—There were 10 carts and 15 tons of cheese. Cheese, old, 70s.; new, 54s. to 60s.; skim-milk cheese, 30s. per cwt.

GLOUCESTER CHEESE MARKET was well supplied. There was also a numerous attendance of buyers, showing the appreciation in which this market is held. About 150 tons of cheese were pitched, of excellent quality and in good condition, and a ready clearance was effected at the following prices:—Loaves, 68s.; best doubles, 64s. to 66s.; singles, 58s. to 60s.; seconds, 54s. to 56s.; and skim, 32s. to 36s. per cwt.

KENDAL CHEESE FAIR was very well attended by the farmers of the neighbourhood with their dairies of skimmed milk cheese. There was a larger weight of skimmed milk cheese shown this year than at last year's fair, and prices a trifle lower—say ¼d. per lb.—ranging from 30s. to 35s. per cwt., or 3d. and 3½d. per lb. There were also two lots of new milk cheese in the market: one from Mr. John Newby, of Storr's Hall, Arkholme, sold at about 60s. per cwt.; the other lot was from John Thompson, Esq., of Lambrigg Park; and it is no idle boast to say that he possesses one of the best cheese-dairy farms in Westmoreland, which were sold to tradesmen in Kendal at 72s. 6d.

PRICES OF BUTTER, CHEESE, HAMS, &c.

Butter, per cwt.	*s.*	*s.*	*Cheese, per cwt.*	*s.*	*s.*
Friesland	106 *to*	112	*Cheshire*	70 *to*	84
Kiel............	—	—	*Chedder*	74	86
Dorset	108	114	*Double Glou., old*	—	—
Carlow	94	104	*New do.*	64	74
Waterford	104	106	*Hams, York*	94	100
Cork, new	98	102	*Westmoreland* ...	90	98
Limerick	98	102	*Irish*	86	90
Sligo	98	106	*Bacon, Wilts., dried* ..	78	84
Fresh, per doz.	13s. 0d.	14s. 0d.	*Irish, green*	72	78

ENGLISH BUTTER MARKET.

AUG. 25.

We note an active trade, at more money.

Dorset, fine	112*s. to* 114*s. per cwt.*
Do. middling	100*s. to* 104*s.* „
Devon	106*s. to* 110*s.* „
Fresh	12*s. to* 14*s. per doz.*

BELFAST, (Friday last.)—Butter: Shipping price, 96s. to 102s. per cwt.; firkins and crocks, 10½d. per lb.; Bacon, 64s. to 70s.; Hams, prime, 80s. to 90s., second quality, 70s. to 76s. per cwt.; prime mess Pork, 97s. 6d. per brl.; Beef, 100s. to 120s. per tierce; Irish Lard, in bladders, 74s. to 76s.; kegs or firkins, 68s. to 70s. per cwt.

Aug. 22.	*Butter. per cwt.*				*Bacon. per cwt.*				*Dried Hams, per cwt.*				*Mess Pork. per brl.*			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1852..	72	0	78	0	50	0	56	0	66	0	70	0	85	0	90	0
1853..	85	0	96	0	58	0	60	0	74	0	78	0	85	0	87	6
1854..	88	0	92	0	54	0	60	0	68	0	74	0	89	0	93	0
1855..	90	0	98	0	58	0	64	0	78	0	84	0	92	6	95	6
1856..	96	0	102	0	64	0	68	0	80	0	90	0	95	0	97	6

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF AUGUST.

The past month has been one of unusual interest, from its great fluctuations, and the crisis to which it brought the agricultural and national weal.

Between probable scarcity and the counteracting influence of fine weather, July closed with every prospect of a successful gathering of the harvest; and prices were evidently giving way, with a much lower range in the distance. The weather, which closed so full of promise, eventually reached a tropical heat; a sudden and general ripening of the corn in all the southern counties almost magically took place, and August commenced with a fall answerable to the effect produced. France ceased from becoming a claimant on our doubtful stocks, her southern provinces were secured, and her northern were still more promising. The new wheat promised to be thoroughly dry, and correspondingly heavy; and the stocks of foreign in granary, as well as the increased arrivals, seemed ill-fated as mercantile speculations, and doomed to a long waiting on buyer's convenience. Reports of a fine harvest-time in America seemed to settle the question; and though Spain and Portugal were badly provided, the simple habits of the mass of their several populations, as well as their genial climates and productive soils, made the supply of their deficiency but a small matter in the general account. This state of things went on till the middle of the month, when the cloudless sky became gradually overcast, till floods of rain reminded the nation of its dependence, and spread universal anxiety and alarm. The standing corn has been seriously beaten down. The sheaves, which were waiting to be housed, have been kept in the fields, and complaints of sprouting to some extent have already prevailed. This latter injury has more seriously affected the barley than wheat, its excessive dryness disposing it more readily to absorb the warm showers. Still should the weather permanently take up, there may not be serious damage, except in the condition of the corn; and the crops in the north, which are not ripe, as well as some backward localities in the south, may yet be housed in good condition. It is well now that foreign supplies have come in more plentifully, and that a large fleet from nearly all quarters of the world is making its way to our shores. Very different reports we obtain as to the yield of wheat this season, but the productiveness of the light lands and friable loams, we think, will more than compensate for deficiencies on the cold clays, and that generally a fair average is forthcoming.

The first Monday on the London market commenced with fair arrivals of foreign wheat and a good show of English samples, the previous week being so dull as to leave its accumulations to swell the morning's supply. Fine weather had universally prevailed, and the millers, anticipating much lower prices as a consequence, were further encouraged in their reserve by the plenty that appeared. The same reluctance to get in stock had been evinced in the country, and factors, willing to make large concessions, offered their bulks (which, after all, were more a semblance than reality) at a decline of fully 10s. per qr.; but it was useless, and the only response was an offer of 15s. per qr. less, which was declined. The market continued thus in suspense till Friday, when speculative sales were made, clearing the whole quantity of English at from 10s. to 12s. below the rates of the previous Monday se'nnight. In the country a heavy fall everywhere was noted, but not to an equal extent, the range of the decline being from 5s. to 10s. per qr., which latter reduction was advised from Boston and Spalding, though Birmingham only quoted the minimum fall. Liverpool's first market fell only 7s. per qr., and on the following Friday there was a partial recovery of 2d. to 3d. per 70lbs., some new American bringing as high as 10s. 3d. for red, and 10s. 6d. per 70lbs. for white. The second Monday's foreign supply was ample, and nearly all from Russia; but less, considerably, was showing from Kent and Essex. Friday's decline was fixed as the price of this day, but with scarcely so depressed an appearance as then. The country markets showed indications of partial recovery this week, and were generally 2s. to 4s. higher; but Birmingham, Norwich, and Newcastle only noted the improvement 1s. to 2s. At Liverpool good qualities, on the Tuesday, realised 1d. to 3d. more per 70lbs., with no further alteration on the closing market. The third Monday showed a very large supply of Russian, and a fair one of American wheat, but the English samples were few. The weather had become broken, with a still doubtful aspect, and Kentish and Essex factors realised an advance of fully 2s. per qr., which in some instances was exceeded; a cool north wind was prevailing, and little harm was apprehended beyond delaying the harvest. Fine foreign was also more in request at the improvement. The earlier country markets showed but little improvement; but violent and continued rains ensuing up to Thursday evening, those which were held later exhibited a greater enhancement, insomuch that on Saturday, with better weather, some quoted an advance of 6s., but others, again, only 2s. per qr. Liverpool was only 3d. per 70lbs. dearer for white wheat on Tuesday, and another 2d. was established on fine qualities on the succeeding Friday. The London trade through the week had been keeping pace with the weather, and on Friday the price was 3s. per qr. higher. The last Monday was only moderately supplied with English wheat, and that chiefly new; with another abundant supply of foreign, chiefly from Petersburg. There was still a drizzling rain, with heavy clouds; but the almost incessant wet for three days abated the eagerness to purchase, and Friday's advance was scarcely reached, the general advance on new wheat being only 2s. to 3s., with, however, a much better inquiry from the country for all foreign; the depression on Russian giving place to a somewhat lively demand, at a greater improvement than on other sorts. The weekly sales, by their steady diminution of quantity, as well as the largeness of the proportion of new wheat in the small supplies lately received, tell us strikingly of the lowness of stocks. The four last weeks' sales amounted to only 276,239 qrs., against 369,914 qrs. in 1855; showing a decrease in the English supplies of 23,318 qrs. weekly, or in all 93,272 qrs. The range of prices in the London returns makes the difference between 82s. 11d. and 70s. 10d., or 12s. 1d. per qr.; the highest being on the first Wednesday, and the lowest on the third. Foreign arrivals have steadily increased, reaching in four weeks to 524,399 qrs. in wheat and flour. This may be partly attributed to the peace, and partly to harvest prospects, and the fear of holding over stocks at high rates, with the late stimulus given to markets by the French, and lately the Spanish and Portuguese, demand. Of this foreign supply, London has had its due proportion, viz., 111,825 qrs. in wheat alone. About 70,000 qrs. of this was Russian; making the average weekly supply about 28,000 qrs., foreign though the English had fallen off to 4,130 qrs. weekly. July nearly doubled the foreign supply of June, and August has exceeded that of July by 44,994 qrs. The exports have doubled during the last month, being 7,821 qrs., chiefly from the peninsular demand.

The Flour trade has followed that of wheat, excepting in town-made qualities, which have passed through all the fluctuations (so it has pleased the London millers) unchanged, or nearly so, ranging from 63s. to 64s. per sack. Norfolks, on the contrary, have swayed to and fro with great sensitiveness, starting at 45s. and finishing at 53s. to 54s. per sack. American, with varying arrivals and qualities, has been more equable; commencing for good sorts at 37s., and closing at about 39s. per brl. The several arrivals in London were as follows: country sorts in four weeks, 35,187 sacks; foreign 380 sacks 78,656 brls. This shows a falling off of English to the extent of 11,150 sacks as compared with July, and a gain in barrels of 27,331, but with 235 less in foreign sacks. The exports have been considerably increased, viz., equal to 3,594 sacks, for the Peninsula, &c.

The prices of old barley have scarcely varied through the month, the supplies being still too insignificant to lower them; and the samples of new that have appeared have been readily caught up, at extravagant values. The quality of the new malting saved before the rain is certainly superb, some reaching to 56lbs. per bush., and bringing 50s. to 52s. per qr.; but we fear the bad weather will bring many inferior samples to market; and with a reduced breadth of this grain, it seems likely to rule high all through the season, though inferior kinds, on the receipt of plentiful foreign supplies, must be lower. The quantities received in London during the four weeks have been only 2,354 qrs. English and 26,305 qrs. foreign, showing certainly a total increase of 9,757 qrs. on the previous month's scanty supply, but also proving that substitutes must have been plentifully used to answer the purpose of pig-feeding, &c.; indeed, the deficiency of this grain has occasioned a liberal use of maize in the South, and may establish a permanent demand for the article.

Malt, since the settlement of its price, after the fluctuations occasioned by the allowances off the duty, has exhibited the same quietness that has marked the barley trade, without varying 1s. in value from the commencement of the month to its close.

The oat trade, with indications of exhaustion as respects our own stock, as well as that of Ireland, has found its necessities made up by more liberal supplies from Russia, the Archangel shipments somewhat plentifully appearing at the end of the month. Prices have varied but little, and do not seem likely to recede till the new corn comes in plentifully from the stores of our own harvest, or those of the continent.

The first Monday was the worst supplied, yet under the influence of the splendid weather then prevailing, prices gave way to the extent of 6d. to 1s. generally. The second Monday, though with rather more foreign, found fewer Irish samples, and rates were accordingly unchanged.

The third Monday, with a similar quantity of foreign, and a few more from Ireland, remained with the rates unaltered; and the last Monday, notwithstanding a heavy supply, chiefly Russian, (and amounting to nearly 40,000 qrs. of this quality alone) found a somewhat improved market, especially for all heavy and sweet sorts, chiefly Dutch brew, at 6d. to 1s. more money. The quantity arrived in London during the four weeks has been 121,240 qrs. foreign, 8,784 qrs. Irish, while the English supply had dwindled down to 1,706 qrs. The weekly average, on the whole, has been fair, though with little to spare for storing, being only about 33,000 qrs., and the excess over the month of July being but 9,073 qrs.

Beans and peas receded in value at the month's commencement, and have not recovered. The first two Mondays noted a reduction successively of 1s. to 2s., equal to an abatement of 3s. per qr. on both; and at this change in value prices have stood. The very hot and dry weather, though it has contributed to the handsomeness of the samples, has rather diminished the expected bulk, especially of beans; but, on the other hand, their unusual exemption from the attack of the fly will serve to give weight to the bushel, and there is still a fair prospect as respects the yield. The season has limited the inquiry. For new handsome, white boiling peas only 45s. has been demanded, which is a considerable decrease on the price of defective old samples of foreign. The new hog peas that have appeared have been unusually sound, and brought 38s. to 40s. per qr.; and while barley keeps at the present value there does not seem much probability that peas will be materially cheaper. Of beans there have arrived in London during the four weeks 1,320 qrs. of home growth, with 3,680 qrs. foreign; of peas only 500 qrs. of native growth, with 2,262 qrs. from abroad.

The arrivals of linseed have been only moderate, but business has scarcely been so lively, prices having undergone no change during the month. Cakes, which were neglected, are again inquired for, the late drought having made feed rather short; but this must soon be remedied by the rains, which already show their effects on the grass lands.

Samples of new white cloverseed, as well of home-growth as foreign, have appeared at market, but prices have not yet been fixed; it is the same also with trefoil, for which last season's high rates are not likely to be realized. New mustard has also been exhibited without a settled value; the crop is said to be short, and injured in quality by the weather. Winter tares have commenced at 7s. 6d. per bushel, but are not yet much sought. Canary has fluctuated, having receded during the month almost 5s. per qr. Carraway, coriander, hempseed, rapeseed, and other descriptions of seed, have been well supported.

CURRENCY PER IMPERIAL MEASURE.

			Shillings per Quarter
Wheat, Essex and Kent, white	73 to 77	extra	— 82
Ditto, red	64 70	,,	— 74
Norfolk, Linc. and Yorksh., red	67 70	,,	— 74
Barley, new, malting	42 48	Chevalier	46 50
Distilling	40 44	Grinding	36 39
Malt, Essex, Norfolk, and Suffolk	69 72	extra	76
Kingston, Ware, and town made	69 73	,,	77
Brown	63 64	,,	—
Rye	— —	—	44
Oats, English feed	26 27	Potato	27 32
Scotch feed	28 31	Potato	29 33
Irish feed, white	23 25	fine	27
Ditto, black	22 23	,,	24
Beans, Mazagan			36 37
Ticks			35 36
Harrow			38 40
Pigeon			42 44
Peas, white boilers	42 45	Maple 40 41 Grey	37 39
Flour, per sk. of 280 lbs., Town, Households	58s.	fine	63 64
Country	54s. 55s.	Households	58 60
Norfolk and Suffolk, ex-ship	— —		53 54

FOREIGN GRAIN.

			Shillings per Quarter
Wheat, Dantzic, mixed	78 to 80	high mixed	— 82 extra 90
Konigsberg	76 80	,,	— 80 ,, 85
Rostock	72 76	fine	80 ,, 88
American, white	68 70	red	63 68
Pomera., Meckbg., and Uckermk., red	72 76	extra	74 80
Silesian ,,	67 72	white	73 78
Danish and Holstein ,,	63 66	,,	66 70
Odessa, St. Petersburg and Riga	54 58	fine	58 63
Rhine and Belgium ,,	— —	old	— —
Russian		French	none
Barley, grinding	35 39	Distilling	39 43
Oats, Dutch, brew, and Polands	26s. to 29s.	Feed	23 26
Danish & Swedish feed	23s. to 26s.	Stralsund	26 28
Beans, Friesland and Holstein			38 39
Konigsberg	37 39	Egyptian	31 33
Peas, feeding	38 40	fine boilers	42 44
Indian Corn, white	32 33	yellow	30 34
Flour, French, per sack	— —	Spanish	59 60
American, sour, per barrel	33 35	sweet	37 39

IMPERIAL AVERAGES.

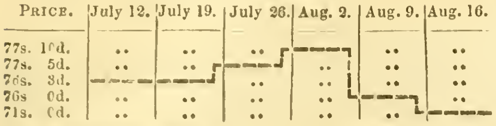
FOR THE LAST SIX WEEKS.

	Wheat.		Barley.		Oats.		Rye.		Beans		Peas	
Week Ending:	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
July 12, 1856..	76	3	40	2	24	11	49	11	45	5	43	7
July 19, 1856..	76	3	40	4	26	11	52	0	46	0	43	9
July 26, 1856..	77	5	41	9	27	2	47	5	45	4	42	2
Aug. 2, 1856..	77	10	42	7	27	9	48	4	45	7	43	8
Aug. 9, 1856..	76	0	43	3	27	1	46	4	45	9	42	10
Aug. 16, 1856..	71	0	43	7	26	3	44	3	44	4	39	0
Aggregate average of last six weeks	75	4	41	7	26	6	48	3	45	3	42	8
Comparative avge. same time last year	76	11	34	8	28	10	44	11	46	6	42	10
Duties	1	0	1	0	1	0	1	0	1	0	1	0

COMPARATIVE PRICES AND QUANTITIES OF CORN.

Averages from last Friday's *Gazette*.		Av.		Averages from the corresponding *Gazette* in 1855.		Av.	
	Qrs.	s.	d.		Qrs.	s.	d.
Wheat....	44,082 ..	71	0	Wheat....	75,681 ..	75	9
Barley....	2,385 ..	43	7	Barley....	6,010 ..	34	2
Oats	7,518 ..	26	3	Oats	8,123 ..	29	1
Rye......	132 ..	44	3	Rye......	241 ..	42	4
Beans....	2,339 ..	44	4	Beans....	2,300 ..	46	6
Peas	412 ..	39	0	Peas	183 ..	43	

DIAGRAM SHOWING THE FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT DURING THE SIX WEEKS ENDING AUGUST 16, 1856.



MONTHLY RETURN.

An Account shewing the Quantities of Corn Grain, Meal, and Flour, imported into the United Kingdom, and admitted to Home Consumption, in the month of July, 1856.

Species of Corn, Grain, Meal, and Flour.	Imported from foreign Countries.			Imported from British Possessions out of Europe			Total.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat	418306	2		16650	3		434956	5	
Barley	34856	0		..			34856	0	
Oats	126297	7		700	0		126997	7	
Rye	..			..			..		
Peas	5171	7		11906	2		17078	1	
Beans	35070	3		..			35070	3	
Maize or Indian Corn	201139	2		3829	3		204968	5	
Buck Wheat	..			..			..		
Beer or Bigg	..			..			..		
Total of Corn and Grain	8.0841	5		33086	0		853927	5	
	cwts.	qr.	lb.	cwts.	qr.	lb.	cwts.	qr.	lb.
Wheat Meal and Flour	654486	0	25	105842	1	5	760328	2	2
Barley Meal	..			..			.		
Oat Meal	..			1607	0	2	1607	0	2
Rye Meal	208	2	21	..			208	2	21
Pea Meal	1	0	0	..			1	0	0
Indian Meal	305	1	24	5	3	2	311	0	26
Buck Wheat Meal	0	1	0	..			0	1	0
Total of Meal and Flour	655001	2	14	107455	0	9	762156	2	23

Custom-House, London, Aug. 12. W. MACLEAN, *Secretary.*

QUANTITY OF FOREIGN GRAIN ENTERED FOR HOME CONSUMPTION DURING THE WEEK ENDING AUGUST 21, 1856.

Wheat	qrs. 33,493	Beans	qrs. 1,050
Barley	,, 5,371	Peas	,, 190
Oats	,, 26,595	Flour	cwts. 15,477

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red, (per cwt.)	—s. to —s.
Ditto white	—s. to —s.
Trefoil, (per cwt.)	—s. to —s.
Tares, winter (per bushel)	7s. 6d. to 8s. 0d.
Coriander (per cwt.)	20s. to 24s.
Carraway (per cwt.).... new —s. to 50s., old	—s. to —s.
Canary (per qr.)	70s. to 72s.
Hempseed (none)	—s. to —s.
Linseed (p. qr.) sowing —s. to —s., crushing	58s. to 60s.
Linseed Cakes (per ton)	£10 0s. to £11 0s.
Rapeseed (per qr.)	new 88s. to 90s.
Ditto Cake (per ton)	£6 10s. to £7 0s.

FOREIGN SEEDS, &c.

Cloverseed, red, French	—s. to —s.
Ditto, white, Dutch	—s. to —s.
Tares, (per bushel)	5s. 0d. to 5s. 6d.
Hempseed, small, (per qr.) —s. 56s., Ditto Dutch,	56s.
Coriander (per cwt.)	15s. to 20s
Carraway	42s. to 46s.
Linseed (pr qr.) Baltic, 56s. to 58s.; Bombay,	56s. to 59s.
Linseed Cake (per ton)	£8 0s. to £9 0s
Rapeseed, Dutch	88s. to 90s
Rape Cake (per ton)	£5 0s. to £5 10s

HOP MARKET.

BOROUGH, MONDAY, Aug. 25.

Our market is very quiet, and prices continue unaltered from last week. Duty £290,000.

NEW HOPS.—The first pocket of new hops has been sent to market (Borough), grown by Mr. William Noakes, of Ticehurst, Sussex, consigned to Messrs. J. T. and W. Noakes, and sold by them to Messrs. Johnson and Hanson, at £7 per cwt. The quality was very good, and they were exceedingly well managed.

The first new pocket of Kent hops, the growth of Mr. Iden Henham, of East Peckham, was consigned to Mr. Jas. Dickenson, hop factor, Borough, and sold to Mr. Thomas Gladwish, hop merchant, St. Dunstan's-hill, City, at £7 5s. per cwt.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

MONDAY, AUGUST 25.

Very large supplies of Potatoes are on sale in these markets, in excellent condition. For most kinds the demand is tolerably firm, at from £3 to £4 4s. per ton. The accounts respecting the crop are favourable.

COUNTRY POTATO MARKETS.—YORK, August 16.—We had a good show of new potatoes, of excellent quality. They sold at from 7d. to 9d. per peck, and from 2s. to 3s per bush. Leeds, August 19.—To-day we had a fair supply of new potatoes, which sold readily at from 8d. to 8½d. per 21 lbs. wholesale, and 8¾d. to 9d. retail. MALTON, August 16.—We had a moderate supply of new potatoes, which sold at from 3d. to 4d. per quartern. RICHMOND, August 16.—Potatoes, 3s. 6d. per bush. THIRSK, August 18.—Potatoes, 5½d. to 7d. per stone. SHEFFIELD, August 19.—Potatoes sold at from 8s. 6d. to 11s. per load of 18 stones. MANCHESTER, August 21. —New potatoes sold at from 6s. to 10s. per 252 lbs.

COVENT GARDEN MARKET.

LONDON, SATURDAY, AUG. 23.

There has been during the week a fair supply of Apples and Pears, but not near the quantity usually received at this season. Greengage Plums are still imported. Of West India Pine Apples one more cargo is expected. They fetch 1s. 3d. to 3s. each. Grapes are plentiful. Oranges fetch 4s. per dozen. There has been a moderate supply of Kent Filberts, at from 65s. to 75s. per 100 lbs. : being very unripe there has been little demand for them. Excellent Tomatoes are still arriving from France. Peas are still well supplied, as are also all other kinds of vegetables. Potatoes exhibit symptoms of disease. Cut flowers consist of Heliotropes, Cacti, Orchids, Gardenias, Stephanotis, Pinks, Cloves, Carnations, Mignonette, Heaths, and Roses.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Pineapples, p. lb.	3	0	@6	0	*Cherries, per lb.*	0	6	3	0
Grapes, per lb.	2	0	5	0	*Goosebers. p. ½ sve.*	2	0	4	0
Figs, per doz.	2	0	6	0	*Cur., half sieve*	3	0	5	0
Melons, each	2	0	5	0	*Oranges, per 100.*	30	0	0	0
Peaches, per doz.	10	0	20	0	*Lemons, p. doz.*	1	0	2	0
Nectarines, p. do.	6	0	15	0	*Filberts per lb.*	0	9	1	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Cabbages, p. doz.	0	9	1	6	*Artichokes, each.*	0	4	0	6
Cauliflowers. p do.	2	0	6	0	*Veg. Mar., p. doz.*	1	0	1	3
F. beans, p. hf. sv.	1	0	2	0	*Tomatoes. p. doz.*	2	0	3	0
Peas, per quart.	0	9	1	0	*Shallots, p. bunch*	0	4	0	6
Potato, new p. ton	50	0	90	0	*Garlic, per lb.*	0	4	0	6
Do., per bush.	2	0	2	9	*Lettuce, cab.. p. sc.*	1	0	1	6
Car., new, p. bun.	0	4	0	6	*Rad., Tur., p. doz.*	1	0	1	6
Turnips, new do.	0	4	0	6	*SmallSal p. pun.*	0	2	0	3
Spinach, p. sieve.	1	6	2	0	*Horserad., p. bnd.*	2	0	4	0
Cucumbers, each	0	2	1	0	*Mushr'ms, p. pot.*	1	6	3	0
Beet, per doz.	1	0	2	0	*Parsley, p. bunch*	0	3	0	4
Celery, per bund.	0	9	1	0	*Mint, green, ditto.*	0	2	0	3
Leeks, per bunch	0	2	0	3	*Marjoram, ditto.*	0	2	0	4
Onions, gn. p. bun.	0	3	0	4	*Savory, do.*	0	2	0	3
					Basil, gn p. bunch	0	4	0	6

CHICORY.

SATURDAY, AUG. 23.

We continue to have a steady demand for all kinds of Chicory and prices generally are well supported.

	£	s.	£	s.		£	s.	£	s.
English, per ton	9	10	10	10	*Hamburgh*....	10	5	11	10
Harlingen	9	10	11	0	*Belgium*	10	10	11	0
Guernsey......	12	0	0	0					

HAY MARKETS.

SATURDAY, AUG. 23.

SMITHFIELD.—A full average supply, and a sluggish demand.

CUMBERLAND.—Both hay and straw sold slowly, at our quotations.

WHITECHAPEL.—Supply tolerably good, and trade rather dull.

At per load of 36 trusses.

	Smithfield.		*Cumberland.*		*Whitechapel*	
Old Meadow Hay	60s.	115s.	68s.	115s.	65s.	115s.
New do.	60s.	85s.	60s.	88s.	60s.	86s.
Old Clover......	90s.	130s.	90s.	130s.	90s.	132s
New do.	60s.	108s.	60s.	108s.	65s.	110s.
Straw..........	28s.	34s.	29s.	36s.	28s.	34s.

FLAX, HEMP, COIR, &c.

There has been only a limited business doing in Flax; prices, however, have ruled about stationary. The demand for most kinds of Hemp is steady, and Petersburgh clean has realized £[illegible]5 1[illegible]s. per ton for sound parcels. Jute and Coir goods are unaltered in value.

LEADENHALL LEATHER MARKET.

LONDON, SATURDAY, AUG. 23.

Our market continues very firm, and the late improvement in value is well supported.

CROP HIDES.

ENGLISH.

lbs.	lbs.		d.	d.
28 to	35	....	14 to	15½
36	40	....	14½	16
40	45	....	15	17
46	50	....	15½	18
50	55	....	16	19
55	60	....	17	20

BUTTS.

ENGLISH.

lbs.	lbs.		d.	d.
14	16	....	20	22
17	20	....	20	22
21	24	....	20	23
25	28	....	21	24
29	32	....	22	26
33	36	....	23	27
FOREIGN.				
14	16	....	18	20
17	20	....	18	20
21	24	....	19	21
25	28	....	20	22
29	32	....	21	23
33	36	....	22	24
36	45	....	—	—
45	50	....	—	—

OFFAL.

	d.	d.
English Shoulders	15	17
Do. Cheeks and Faces	6	9
Do. Bellies............	10	11½
Do. Middles..........	12	14
Foreign Shoulders	12	14
Do. Necks............	10	11
Do. Bellies	8½	10
Do. Middles do.	12	13
Dressing Hide Shoulders.	11	13
D. do. Bellies ..	9	10
Kip Shoulders............	5	8
Do. Bellies	4	5

DRESSING HIDES.

	lbs.	lbs.	d.	d.
Common......	20 to	24 ..	14 to	15
Do.	25	28 ..	14	15
Do.	30	34 ..	14	15
Do.	35	40 ..	14	15
Saddlers	30	35 ..	15	19
Do.	36	50 ..	14	16
Bulls			11	12
Shaved	14	16 ..	17	18½
Do.	17	19 ..	17	18
Do.	20	23 ..	16	17½
Do.	24	28 ..	15½	17
Scotch do.	16	24 ..	16	18½
Coach, per Hide........			28s. to	32s.

HORSE BUTTS.

	d.	d.	Shaved. d.	d.
English	11 to	12..	12½ to	14
Spanish	11	12..	12½	14

HORSE HIDES.

	lbs.	lbs.	d.	d.
English..........	13 to	18..	9½ to	11½
Do. without butts	9	14..	9½	11
			s.d.	s.d
Spanish salted, without butts, per hide.	6	9..	8 0	11 0
Do. do. do.	9	11..	10 0	13 0
Do. do. do.	inferior..		7 0	9 0
Do. dry do.	6	8..	7 0	10 0
Do. do. do.	9	11..	9 0	12 0
Do. do. do.	inferior..		6 0	8 6

CALF SKINS.

Av. weight. lbs.	lbs.	Unrounded. d.	d.		Rounded. d.	d.
20 to	28......	17 to	21	....	19 to	25
30	35......	17	21	....	19	27
35	40......	17	22	....	21	30
40	45......	18	22	....	22	30
45	50......	18	22	....	22	30
50	55......	18	22	....	22	29
55	60......	17	21	....	21	29
60	70......	17	21	....	20	28
70	80......	17	20	....	20	26
80	90......	16	20	....	19	24
90	100......	16	19	....	18	23
100	120......	15	18	....	18	22

KIPS.

	lbs.	lbs.	d.	d.
Petersburgh ..	4 to	7	0 to	0
Do. ..	7	9	0	0
Do. ..	9	10	0	0
Do. ..	11	13	0	0
E. Ind. dry sltd.	5	7 ...	18	21
Do. do.	7	9 ...	17	20
Do. seconds........ ...			15	18
Do. thirds			13	15
Do. inferior			10	13

SUNDRIES.

	s.	s.
Hog Skins, best ......each	10 to	18
Do. seconds... ,,	8	10
Seal Skins, split, per doz..	42	56
Do. for bindings ,,	48	66
Calf Skins, Sumach, tanned .... ,,	30	50
Do. white....... ,,	20	40
Horse Hides, white, each..	6	12
Sheep Skins—	d.	d.
Basils, unstrained, per lb.	6	14
Do. strained ,,	8	14
Do. facing, per doz....	6s.	18s.
Tan, Sheep, & Lambs ,,	10	22
White Sheep, per 120 ...	80	110
Do. Lambs, ,, ..	60	90
Do. Sheep & Lambs, strained, per doz.	7	18
Sumach Roans, per doz.	20	38
Do. Skivers, ,,	10	18
Bark Skivers, ,,	9	16
Hide Splits, per lb.	7d. to	8½d.

BIRMINGHAM HIDE, SKIN, AND FAT MARKET.

SATURDAY, AUG. 23, 1856.

HIDES.	Per lb. s.	d.		s.	d.
85lbs. to 94lbs.	0	0	..	0	5½
75lbs. to 84lbs.	0	0	..	0	5½
65lbs. to 74lbs.	0	0	..	0	5
56lbs. to 64lbs.	0	0	..	0	4⅞
55lbs. and under....	0	0	..	0	4⅞
Cows	0	4⅜	..	0	4⅝
Horse........ (each)		6	..	0	0
Bulls	0	3⅜	..	0	3½
Flawed and irregular	0	0	..	0	4¼
Kipp..................	0	0	..	0	5⅛

CALF.	Per lb. s.	d.		s.	d.
17lbs. and upwards..	0	0	..	0	6⅜
12lbs. to 16lbs.......	0	0	..	0	7⅞
9lbs. to 11lbs.......	0	0	..	0	7¼
Light	0	0	..	0	6⅛
Flawed and irregular	0	0	..	0	6⅜

WOOL SKINS ....0s. 0d. to 0s.

LAMBS..[illegible]s, [illegible]d.— 3s. 7d.—4s. 10d.

PELTS ..1s. 8½d.—2s. 7d.—4s. 1d.

FAT..Mut., beef, & mixed 4⅛d. to 4⅞d.

BAMFORD BROTHERS, Brokers.

HIDE AND SKIN MARKETS.

SATURDAY, AUG. 23.

	s.	d.	s.	d.	
Market Hides, 56 to 64 lbs..........	0	4	0	0	*per lb.*
Do. 64 72 *lbs*..........	0	4	0	4¼	,,
Do. 72 80 *lbs*..........	0	4¼	0	4¾	,,
Do. 80 88 *lbs*..........	0	4¾	0	5	,,
Do. 88 96 *lbs*..........	0	5	0	5¼	,,
Do. 96 104 *lbs*..........	0	5¼	0	5½	,,
Horse Hides each..................	7	0	0	0	,,
Calf Skins, light	2	0	3	6	,,
Do. full	7	6	0	0	,,
Polled sheep......................	2	10	3	4	,,
Half-breds	2	4	2	9	,,
Downs.............................	2	0	2	4	,,
Lambs	2	6	4	2	,,

TIMBER.

LONDON, SATURDAY, AUG. 23.

The market prices of wood have become fixed by sales of the varieties now arriving from all ports. There has been some amount of business done in Canadian goods and in Russian and Finland produce, and the indication of fair consumption is encouraging. A rising freight will check the importation for the fall of the year.

	1855.					1856.			
	£	s.	£	s.		£	s.	£	s.
Quebec, red pine ....per load	0	0	0	0	..	0	0	0	0
yellow pine	3	10	4	5	..	3	0	3	10
St. John's, N.B., red	0	0	0	0	..	0	0	0	0
yel.	5	0	6	0	..	0	0	0	0
Quebec, Oak, white.............	6	0	6	10	..	5	0	5	10
Birch	5	0	5	10	..	3	15	5	0
Elm	5	0	5	10	..	5	10	0	0
Dantzic, Oak	6	0	7	0	..	4	15	6	0
Memel, Fir.....................	3	5	4	0	..	3	5	4	10
Riga	3	10	3	15	..	0	0	0	0
Swedish	2	12	2	17	..	2	15	3	0
Masts, Quebec, red pine	6	0	9	0	..	9	0	12	10
yellow pine......	5	0	8	0	..	8	0	10	10
Lathwood, Dantzic fm.........	10	0	10	10	..	8	0	9	0
Memel.............	9	0	10	0	..	8	0	9	0
St. Petersburgh	12	0	13	0	..	0	0	0	0
Quebec	5	0	6	0	..	5	0	5	10
Deals, per C 12 feet by 9 inches,									
Quebec, white spruce	17	0	20	0	..	15	10	19	0
red pine	16	0	20	0	..	17	0	20	0
St. John, white spruce	16	0	18	0	..	14	10	17	0
Yellow pine, per reduced C.									
Canada, 1st quality..........	17	0	19	0	..	16	0	20	0
2nd ditto	12	0	12	0	..	10	10	12	10
Archangel, yellow............	17	0	17	10	..	21	0	22	10
Memel	12	0	18	0	..	14	0	19	0
Gefle, yellow, 14 ft.	21	0	25	0	..	26	0	28	0
Gothenburg, yellow	11	0	15	0	..	23	0	27	0
white	10	0	12	0	..	17	0	20	0
Christiania, p. C. 12 ft. by 3 in.									
yellow	26	0	30	0	..	25	0	50	0
white............	20	0	24	0	..	20	0	24	0
Deck Plank, Dant., p. 40 ft. by 3 in	1	0	1	10	..	1	0	1	10
Staves, per standard M.									
Quebec, pipe	70	0	75	0	..	70	0	75	0
puncheon............	17	0	20	0	..	18	0	20	0
Baltic, crown pipe	130	0	140	0	..	110	0	150	0

METALS.

LONDON, SATURDAY, AUG. 23.

There has been a moderate demand for Scotch pig iron, at 73s. to 73s. 6d. Manufactured parcels are very firm. Nail rods, £9 10s.; hoops, £10 10s ; sheets, £11 per ton. Tin is dull and drooping. Banca, 125s. to 125s. 6d. ; straits, 124s. to 124s. 6d. Tin plates command full quotations. IC coke, 30s. 6d. per box. Lead is firmer. Spanish pig, £23 ; English, £23 10s. to £24 ; sheet, £24 10s. to £25. Spelter, on the spot, has realized £25 to £25 10s. Zinc is active at £32 to £32 10s. per ton. Most other metals are firm.

ENGLISH IRON.	Per ton. £	s.	d.
Bar and bolt a	9	0	0
In Wales a	8	0	0
In Liver. a	8	12	6
In Staffords., a.	9	0	0
**Sheets, single a*	11	0	0
* *,, double a*	11	10	0
**Hoop a*	10	10	0
**Nail rod, rnd. a.*	9	10	0
,, square a	10	0	0
Rails (Wales) c	8	0	0
(Staffordsh.) e	8	10	0
Railw. Chairs, Clyde	4	10	0
Pig, No. 1, Clyde c	3	13	6
3-5ths No. 1 & 2-5ths No. 3	3	13	6
No. 1, in Wales b	4	0	0
Scotch pig No. 1 in London	4	15	0
Stirling's Non laminating or Hardened Surface Rails ..£9—	9	2	0
C.-blast, No. 1 Foun.	6	10	0
Charcoal bars	14	10	0
Stirling's Patent toughened Pigs, in Glasgow	3	12	6
Do. in Wales......£4—	4	5	0
FOREIGN IRON. *a.*			
Swedish	15	0	0
Russian CCND	14	10	0
Ind. Ch. Pigs in Lon.	6	0	0
FOREIGN STEEL. *a.*			
Swedish keg, nom.	£19 10-19 15		

SPELTER. *c.*	Per ton. £	s.	d.
On the spot ....£25—	25	5	0
To arrive	25	15	0
ZINC.			
In sheets d. .. £32—	32	10	0
ENGLISH COPPER.			
Tile, 14 to 28lbs. a	107	10	0
Tough cake a	107	10	0
Sheath. & bolts a. p. lb	0	1	0
Sheet a	0	1	0
Bottoms a	0	1	1
Yellow Metal a	0	0	10¼
Wetterstedt's Patent Metal† cwt.	2	0	0
ENGLISH LEAD. *a.*			
Pig, per ton £23 10—	24	0	0
Sheet	25	0	0
FOREIGN LEAD. *a.*			
Span. in bond p. ton. £22	10-23		
ENGLISH TIN. *c.*			
Block per cwt.	6	7	0
Bar	6	8	0
FOREIGN TIN. *c.*			
Banca	6	5	6
Straits (uncertn)	6	4	6
TIN PLATES. *b.*			
IC Charcoal, p. bx.	1	15	0
IX ditto	2	0	0
IC Coke	1	10	6
IX ditto	1	16	0
Canada plates per ton	14	10	0
Quicksilver, f, p. lb	1s. 8½d.-1s 9d		

Terms.—a, 2½ per cent. dis.; b, 3 ditto; c, nett; d, 1½ per cent. dis.; e. 2 ditto ; f, 1¼ ditto.

Delivered in Liverpool, 10s. per ton less.

* *Cold blast, f.o.b in Wales.*

† *Dis. for cash in 14 days 5 per cent.*

OIL MARKET.

	£	s.	d.		£	s.	d.
Olive, Florence half-chests	1	1	0	*to*	1	2	0
Lucca	7	10	0		8	0	0
Gallipoli (252 gallons)	55	0	0		55	10	0
Spanish	54	0	0		55	0	0
Linseed (cwt.)	1	18	6		2	0	0
Rape, Pale	2	12	0		2	14	0
Brown	2	10	0		2	12	0
Cod (tun)	47	0	0		48	0	0
Seal, Pale	48	0	0		48	10	0
Ditto, Brown, Yellow, &c.	40	0	0		45	0	0
Sperm	105	0	0		106	0	0
Head Matter	128	0	0		0	0	0
Southern	47	0	0		49	0	0
Cocoa Nut (cwt.)	2	4	0		2	6	0
Palm	1	18	0		2	3	0
WHALEBONE.							
Greenland, full size (per ton)	365	0	0		310	0	0
South Sea	280	0	0		285	0	0
PITCH.							
British (per cwt.)	0	6	9		0	7	0
Archangel	0	10	6		0	0	0
Stockholm	0	12	0		0	0	0
TURPENTINE.							
Spirits (per cwt.)	1	10	6		1	11	6
In Puncheons	0	0	0		1	9	6
Rough	0	9	0		0	9	6
TAR.							
American (British)	1	3	0		0	0	0
Archangel	1	3	0		1	4	0
Stockholm	0	16	0		0	17	0
RESIN.							
Yellow (per cwt.)	0	7	0		0	10	0
Transparent	0	6	0		0	15	0

BARK, &c.

	£	s.	d.	£	s.	d.
English, per load of 45 cwt., del. in London	13	10	0	15	10	0
Coppice	14	0	0	16	0	0
Dutch, per ton	5	0	0	5	5	0
Hambro'	4	10	0	5	5	0
Antwerp—Tree	5	0	0	6	0	0
,, Coppice	6	0	0	6	10	0
French	4	0	0	6	5	0
Mimosa	9	10	0	11	0	0
,, Ground	11	0	0	12	10	0
Cork Tree—Barbary	7	0	0	7	10	0
,, Leghorn	6	0	0	7	0	0
Valonia, Smyrna, per ton	14	10	0	15	10	0
,, Camata	15	0	0	16	0	0
,, Morea	11	0	0	13	10	0
Terra Japonica Gambier	19	0	0	0	0	0
Terra Japonica Cutch	40	0	0	42	0	0
Divi Divi	11	0	0	12	10	0
Myrabolams	9	0	0	12	0	0
Sumach, Sicily, per cwt	0	13	6	0	14	0

MANURES.

PRICES CURRENT OF GUANO.

		£	s.	d.		£	s.	d.
Peruvian Guano	*per ton*	£12	5	0	*to*	£13	0	0
,, D. first class (damaged)	,,	11	5	0		0	0	0
Bolivian Guano (none)	,,	0	0	0		0	0	0
ARTIFICIAL MANURES, OIL CAKES, &c.								
Nitrate Soda	,,	19	10	0		21	0	0
Nitrate Potash or Saltpetre	,,	29	0	0		30	0	0
Sulphate Ammonia	,,	16	0	0		17	0	0
Muriate ditto	,,	22	0	0		23	0	0
Superphosphate of Lime	,,	6	0	0		0	0	0
Soda Ash or Alkali	,,	0	0	0		8	0	0
Gypsum	,,	2	0	0		2	10	0
Coprolite	,,	4	5	0		4	10	0
Sulphate of Copper, or Roman Vitriol for Wheat steeping	,,	42	0	0		43	0	0
Salt	,,	1	5	0		2	0	0
Bones, Dust	*per qr.*	1	5	0		1	6	0
,, ½ inch	,,	1	4	0		1	5	0
Oil Vitriol, concentrated	*per lb*	0	0	1		0	0	0
,, Brown	,,	0	0	0¾		0	0	0
Rape Cakes	*per ton*	7	0	0		7	10	0
Linseed Cakes—								
Thin American in brls. or bags	,,	11	0	0		11	10	0
Thick ditto round	,,	10	5	0		10	10	0
Marseilles	,	9	10	0		10	0	0
English	,,	11	0	0		11	10	0

PICKFORD and KEEN, 35, Leadenhall-street.

Williams and Co., 24, Mark Lane, Azotic £6 10 0

Manufactured by Hodgson and Simpson, Wakefield, and Matthews and Co., Driffield,
Ammonia-Phosphate and Nitro-Phosphate, per ton £8 0 0
Superphosphate of Lime .... ,, 7 0 0

Agricultural Chemical Works, Stowmarket, Suffolk.
Prentice's Cereal Manure for Corn Crops, per ton £8 10 0
Prentice's Turnip Manure .... ,, £7 0 0
Prentice's Superphosphate of Lime .... ,, £6 10 0

Lancashire Manure Company.
Widnes, near Warrington, J. Knight and Co.'s Nitrogenized Bone Manures ....*per ton* £8 15 0

Manure Works, Grovehill, Beverley.
Tigar and Co.'s Celebrated Turnip Manures, per ton £7 10 0

COAL MARKET.

	Monday, Aug. 18. s.	d.	Wednes., Aug. 20. s.	d.	Friday, Aug. 22. s.	d.
Wallsend Haswell's	19	0	19	0	..	
Do. Hetton	19	0	19	0	19	0
Do. Lambton's	18	6	18	6	18	6
Do. Stewart's	19	0	19	0	19	0
Do. Caradoc	17	9	..		..	
Do. Cassop	17	9	17	9	..	
Do. Hartlepool	18	6	18	6	18	9
Do. Heugh Hall	17	6	17	6	18	0
Do. Kelloe	18	0	18	0	..	
Do. Tees	19	0	19	0	19	0
Do. Heaton	16	9	17	0	..	
Do. Riddell	16	9	..		16	9
Tanfield Moor	14	6	14	6	..	
Hartley	18	6	18	6	18	3

Ships at Market.—Aug. 18th, 146; Aug. 20th, 102; Aug. 22nd, 23; Total, 280 ; 217 sold.

SPIRITS.

LONDON, SATURDAY, AUG. 23.

We have had a very slow sale for nearly all kinds of Rum, this week, and prices have had a downward tendency. The Brandy market, however, is firm, at full quotations. British-made spirits command extreme rates.

RUM.

	s. d.	s. d.
East India, proof.................. *per gal.*	2 3	0 0
Leewards, ditto	2 3	2 3½
10 *to* 20 *over proof*..........	3 0	3 6
21 *to* 29 *do.*	3 6	3 10
Demerara.......30 *to* 34 *do.*	4 0	4 3
30 *to* 40 *do.*	4 4	4 8
Jamaica.........26 *to* 29 *do.*	4 4	4 8
32 *to* 36 *do.*	4 6	4 11
Better qualities 32 *to* 36 *do.*	0 0	5 0
Superior Marks 36 *to* 40 *do.*	5 6	5 10

BRANDY.—COGNAC.

Vintage	*Shipped by Martell.*		*Shipped by Hennessy.*		*Shipped by Otard.*		*Shipped by Viny. Pro- Company.*	
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1848....	11 2	11 6	11 2	11 6	0 0	0 0	0 0	0 0
1849....	10 10	11 0	10 10	11 0	0 0	0 0	0 0	0 0
1850....	10 7	10 10	10 7	10 10	0 0	0 0	0 0	0 0
1851....	10 6	10 8	10 6	10 8	10 6	10 8	0 0	0 0

Hhds. 2d per gallon higher. Puncheons scarce.

	s. d.	s. d.
Other Shippers	6 0	7 6
Hollands Geneva fine, for duty................	3 8	4 0
Other qualities, to arrive and on the quay..	3 2	4 7
British Gin for exportation, proof ......*hhds.*	4 2	4 0

BRITISH SPIRITS.

	s. d.	s. d.
Gin, proof, cash	11 3	0 0

WOOL MARKETS.

BRITISH WOOL MARKET.

AUGUST 25.—The stocks of home-grown wool in the hands of the staplers are very moderate, and there is more disposition shown to purchase nearly all kinds. We have scarcely any change to notice in the quotations; but they are fully supported in every instance. For export to the Continent, very little is doing; buyers having mostly supplied themselves with low qualities of colonial at the public sales.

	Per lb.			Per Pack of 240lb.		
	s. d.		s. d.	£ s.		£ s.
Down tegs..........	1 4	*to*	1 5½	16 0	*to*	17 10
Half-bred do	1 3	—	1 4½	15 0	—	16 10
Down ewes	1 3	—	1 4½	15 0	—	16 10
Kent fleeces	1 1	—	1 3	13 0	—	15 0
Combing skin........	0 10	—	1 3½	10 0	—	15 10
Flannel wool........	1 0	—	1 4	12 0	—	16 0
Blanket wool........	0 8	—	0 11	8 0	—	11 0
Leicester fleeces	1 1	—	1 3	13 0	—	15 0

BRADFORD WOOL MARKET, Aug. 21.—The supply of wool continues to pour into the market very freely, while the business transaction continue upon the smallest scale. Prices on some kinds are less firm than a few weeks past. The high prices paid by the staplers for the stock held by them compels them to stand out for prices which at present are not obtainable. In noils and short wools no alteration. In yarns there has been more business doing by the export houses during the week, and to-day orders are offered more freely at prices lately current. Spinners are generally asking higher prices, which are reluctantly conceded. The amount of idle machinery is considerable, which can only be put to work when prices are such as to be an inducement. In pieces the languid and unsatisfactory state of business which had been observable so long still continues, and we cannot report any transactions in this day's market. The demand for goods is very limited.

KENDAL WOOL FAIR.—Wool, according to quality, from 11d. to 13d. per lb. Several weeks before the "clip," agents from the manufacturing firms in this neighbourhood, and from Yorkshire, were "out" amongst the sheep farms, and bought up nearly the whole of the "clips" in this neighbourhood before the sheep were shorn, which will account for the slender show at the fair. However, at the close of the market the wool was cleared off, none remaining unsold.

LEEDS WOOL MARKET, Aug. 22.—There has not been any material change in this branch of business this week. The demand has been to supply the immediate wants. Prices are firm at last week's rates.

NEW ROMNEY WOOL FAIR.—As much of the wool in the district had been previously sold, the fair was very small, and but very little was disposed of, but the lots that changed hands fetched 15d. per lb.

YORK WOOL MARKET, Aug. 21.—We had a fair supply of wool. First-class hog fleeces, 16d. to 16½d.; second ditto, 15d. to 15½d.; half hog and ewe, 14d. to 14½d.; all ewe, Masham, Cheviot, and Southdown fleeces, 13d. to 13½d.; cotted fleeces, 11d. to 12d.; locks, 9d. to 10d.; Moor wool, 8d. to 9d. per lb. The market closed heavily at the above rates.

LIVERPOOL WOOL MARKET, AUG. 23.

SCOTCH WOOL.—The market has been very firm this week, and throughout the country wools are becoming worse to buy, and in most cases higher prices are required, which buyers concede very reluctantly.

	s. d.		s. d.
Laid Highland Wool, per 24lbs. ..	12 9	*to*	14 0
White Highland do.	14 6		16 0
Laid Crossed do..unwashed	14 6		15 6
Do. do..washed	15 6		16 6
Laid Cheviot do..unwashed	16 0		17 6
Do. do..washed	18 9		22 0
White Cheviot do..do	30 0		32 0

FOREIGN meets with ready sale, and prices are well supported.

	Foreign.		Scotch.
Imports for the week..	488	..	655 *bales.*
Previously this year ..	96,913	..	1,566 ,,

FOREIGN WOOL MARKETS.

CITY, AUG. 25.—Commercial advices from Hungary of the 16th inst. report the commencement of the wool fair at Pesth, when about 2,000 centners of this season's clip were brought to market, of middling sorts, which realized from 115 to 145 Austrian florins per centner; some small lots of inferior wools brought 93 to 94 florins; and of the finest sorts from Bac about 200 centners were sold at 130 to 135 florins. Advices from the Berlin wool market state that business continues to be in a satisfactory position. During the week ending the 15th inst., from 10,000 to 12,000 quintals were sold at an average rise of 3 to 4 thalers upon previous quotations.

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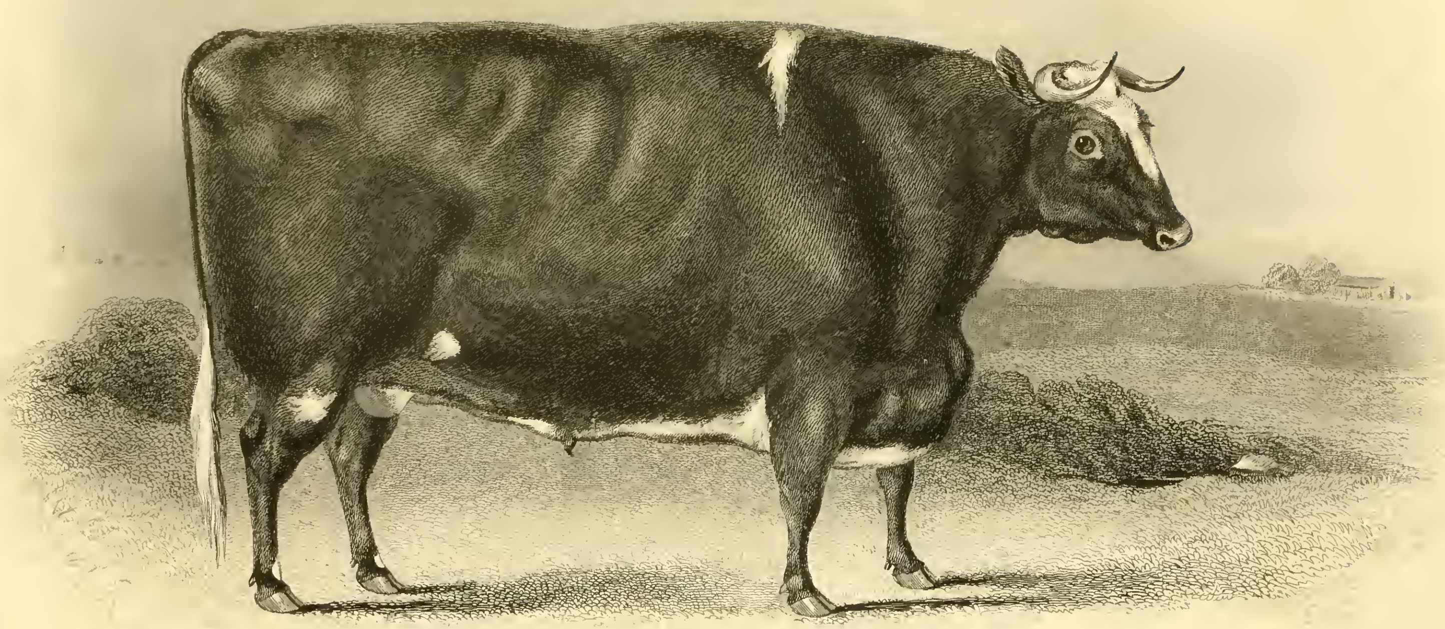

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The Property of the Hon.ble E. G. Pennant of Penrhyn Castle Carnarvonshire for which the Prize of £[illegible] and Silver Medal were awarded at the Birmingham Cattle Show Dec.r 1855

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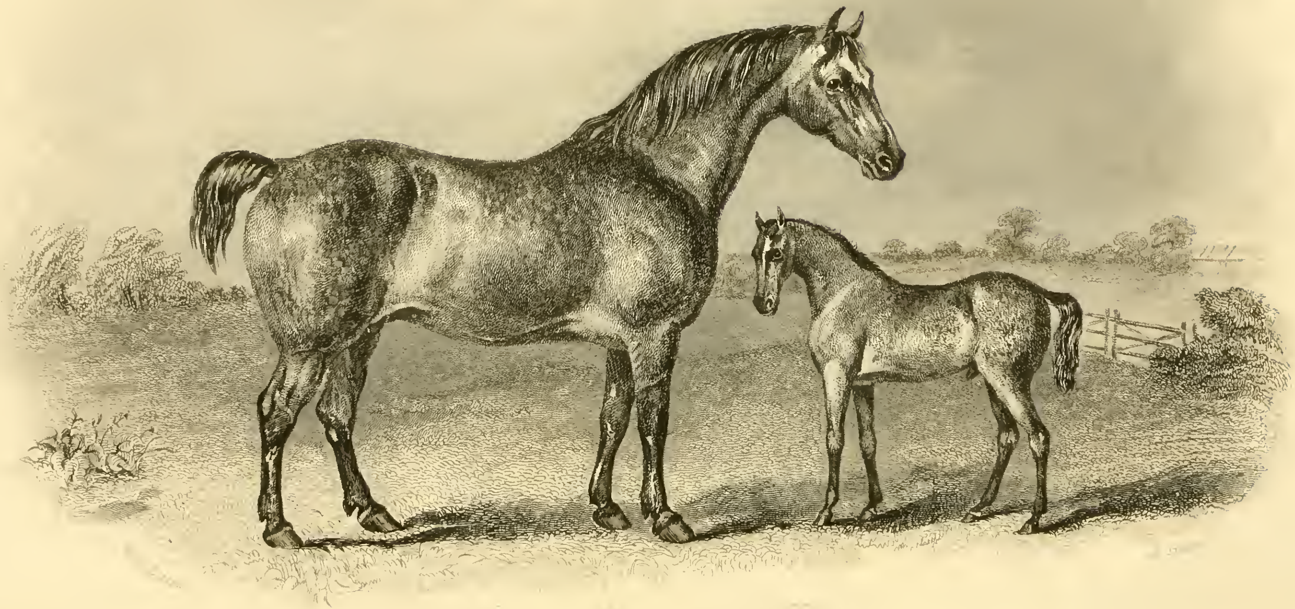

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[illegible] August [illegible]

[illegible] Published by [illegible] 49 [illegible]

THE FARMER'S MAGAZINE.

OCTOBER, 1856.

PLATE I.

A SHORT-HORN OX,

THE PROPERTY OF COLONEL THE HONOURABLE E. G D. PENNANT, OF PENRHYN CASTLE, CARNARVONSHIRE,

For which the first prize of Ten Sovereigns and Silver Medal were awarded at the Birmingham Cattle Show, Dec., 1855.

Colonel Pennant was one of the few exhibitors who gave their support last Christmas to both the Smithfield and Birmingham fat cattle shows. He had a Short-horn in Baker-street very deservedly commended; while in Bingley Hall the beast whose portrait accompanies this was declared to be the best of all that breed. Our report describes him as a first-rate specimen of the sort; symmetrical in form, a rich red in colour, and with all the credentials of distinguished blood.

PLATE II.

A CART MARE AND FOAL,

THE PROPERTY OF J. SIMPSON, ESQ., OF HUNMANBY, YORKSHIRE,

For which the first prize of Five Sovereigns was awarded at the Malton Meeting of the Yorkshire Agricultural Society, August, 1855.

All the Yorkshire meetings have been famous for their show of horses, but the Malton anniversary was especially so. From Burgundy, the finest hunter-stallion that perhaps ever entered a yard, down through every grade and class, there was much to admire. They had all, too, some "go" in them. For so keen a judge as the Yorkshireman, a horse for any purpose must be able to move; and we have thus a favourable sample of the modern cart-horse. The time is gone when people estimated the draught-horse for his big ugly head, hairy legs, and lumbering action. Whether a Clydesdale, a Suffolk, or a Yorkshire, he must learn to step out; and, if needs be, rattle along almost as well in the spring market cart, as he would shine at harder work. Mr. Simpson, of Hunmanby, has been long known for a good sort.

FARM-YARD MANURE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

At a period of the year when the preparation of farm-yard manure is about to become more than usually extensive, it will be well if we examine some recent researches on so important and so practical a question. We have many causes to prompt us to be hopeful in such an inquiry. The experience of several generations leads to the conclusion that farm-yard manure has long been greatly improving in value. Before the introduction of root-crops and of oil-cake as food for live stock, the manure of the homestead produced by straw and hay-fed animals must have been universally much less in bulk, and still less valuable in its quality, than now. In the course of its improvement, first came the introduction of turnips, which led to the general winter-keeping of stock on roots and hay; then to the adding to their food corn and oil-cake: warmth was found to promote the progress of the fatting ox; stall-feeding thence more generally followed. Next came the common conviction that the dung increased in value with the richness of the food, and that the value of dung produced in sheds or boxes was far more enriching than when prepared in open yards. This gradually led to experiments to test the different power of dung made by the same animals, and from the same food, in covered and uncovered yards. Of this kind were the trials of Lord Kinnaird on wheat, and on Regent and Shaw potatoes (*Jour. Roy. Ag. Soc.*, vol. xiv., 336). The dung in his experiments was applied at the rate of 20 loads per acre, upon a rich loam lying on the trap rock. The produce of these from the uncovered dung was:—

	Tons.	Cwts.	Lbs.
1st measurement........	7	6	8
2nd measurement	7	18	99

The produce from the dung produced in a covered yard was:—

1st measurement........	11	17	56
2nd measurement	11	12	26

In the October of the same year (1850), as soon as the potatoes were lifted, Fenton wheat was drilled on the same land at the rate of 3 bush. per acre. (In the following spring the whole field was dressed with 3 cwt. of Peruvian guano per acre.) The produce on the differently manured soil was as follows. Firstly, the wheat from the uncovered dung yielded:—

	Grain.		Straw.
Acre.	Bush.	Lbs.	Stones of 22 lbs.
1st	41	19	152
2nd....	42	38	160

The wheat from the covered dung produced:—

1st	55	5	220
2nd....	53	47	210

The results of these trials, generally according with the observations of others, render the researches of the chemist upon the composition of the manure prepared in both these ways very interesting. It is but lately, however, that anything has been accomplished in this way. The results of the labours of Professor Voelcker, given in the last number of the *Journal of the Royal Agricultural Society*, is by far the most valuable addition to our knowledge of the chemistry of farm-yard manure that has yet appeared; and if I attempt to give a portion of these difficult and lengthy inquiries, it is merely with the hope that it may induce my readers to refer to the far more copious detail given in the Society's Journal. The dung on which he experimented was prepared in the way which he thus describes:—"In undertaking this investigation, I encountered a difficulty which every one must have felt in experimenting on farm-yard manure, namely, the difficulty of obtaining a sample sufficiently homogeneous to serve as the basis for future operations. In experimenting on fresh, or long dung especially, it is no easy matter to incorporate the long straw uniformly with the more minutely-divided droppings of animals; perhaps altogether a perfect mixture of both cannot be realized, and we must therefore be satisfied to make the mixture as intimate as the nature of the materials will permit. I endeavoured to reach this point by employing two men for the greater part of the day in turning a considerable quantity of fresh long dung, composed of horse, cow, and pig dung. By frequent turnings and distributions of the droppings amongst the long straw, I thus obtained a tolerably uniform sample of mixed farm-yard manure, which served as the basis for all future experiments and analyses with fresh dung."

With manure thus prepared, several laborious sets of experiments were made. I select two only of these, as showing to a considerable degreee the varying composition of dung during several months prepared in the open air and under cover. Two separate parcels of dung were placed, on the 3rd of November, side by side, the first in a heap under a shed, the second in a heap under a wall exposed to the atmosphere; these were both analyzed from time to time, and the result of these valuable examinations will be found in the following tables. Firstly, the dung placed under the shed—

Nov. 3, 1854, weighed 3,258 lbs.
Apr. 30, 1855, „ 1,613 Decrease 1,645lbs.
Aug. 23, „ „ 1,297 „ 1,961
Nov. 15, „ „ 1,235 „ 2,023

During its decomposition it was analysed at four different periods. Its varying composition was found to be as follows:—

	Nov. 3rd, 1854.	Feb. 14th, 1855.	April 30th, 1855.	Aug. 23rd, 1855.	Nov. 15th, 1855.
Water	66.17	67.32	56.89	43.43	41.66
* Soluble orga. matter	2.48	2.63	4.63	4.13	5.37
Sol. inorganic matter	1.54	2.12	3.38	3.05	4.43
† Insol. organic matter	25.76	20.46	25.43	26.01	27.69
Insol. mineral matter	4.05	7.47	9.67	23.38	20.85
	100.00	100.00	100.00	100.00	100.00
* Containing nitrogen	.149	.17	.27	.26	.42
Equal to ammonia ..	.181	.20	.32	.31	.51
† Containing nitrogen	.494	.53	.92	1.01	1.09
Equal to ammonia ..	.599	.70	1.11	1.23	1.31
Total nitrogen	.643	.75	1.19	1.27	1.51
Equal to ammonia ..	.780	.90	1.43	1.54	1.82
Ammonia in free state	.034	.022	.055	.015	0.19
Ammonia in salts....	.088	.054	.101	.103	.146
Total organic matter..	28.24	23.09	30.06	30.14	33.06
Total mineral subs. ..	5.59	9.59	13 05	26.43	25.28

Thus protected from the influence of the weather, it will be seen that it lost almost two-thirds of its gross weight in 12 months; that in this time a given weight doubled its amount of nitrogen, and more than quadrupled its weight of mineral substances.

Secondly, the heap of dung exposed to the atmosphere—

Nov. 3, 1854, weighed 2,838 lbs.
Apr. 30, 1855, „ 2,026 Decrease 812 lbs.
Aug. 23, „ „ 1,994 „ 844
Nov. 15, „ „ 1,974 „ 864

Its varying composition, when examined at the same period as the other heap, was:—

	Nov. 3rd, 1854.	Feb. 14th, 1855.	April 30th, 1855.	Aug. 23rd. 1855.	Nov. 15th, 1855.
Water	66.17	69.83	65.95	75.49	74.29
* Soluble orga. matter	2.48	3.86	4.27	2.95	2.74
Sol. inorganic matter	1.54	2.97	2.86	1.97	1.87
† Insol. organic matter	25.76	18.44	19.23	12.20	10.89
Insol. mineral matter	4.05	4.90	7.69	7.39	10.21
	100.00	100.00	100.00	100.00	100.00
* Containing nitrogen	.149	.27	.30	.19	.18
Equal to ammonia ..	.181	.32	.36	.23	.21
† Containing nitrogen	.494	.47	.59	.47	.47
Equal to ammonia ..	.599	.57	.71	.62	.57
Total nitrogen	.643	.74	.89	.66	.65
Equal to ammonia ..	.780	.89	1.07	.85	.78
Ammonia in free state	.034	.019	.008	.010	.006
Ammonia in salts....	.088	.064	.085	.038	.041
Total organic matter..	28.24	22.30	23.50	15.15	13.63
Total mineral subs. ..	5.59	7.87	10.55	9.36	12.08

This we find did not in twelve months lose one-third of its gross weight, but then the amount of nitrogen was not increased, and its mineral matters were only doubled.

The more prominent and practically interesting points which these experiments have developed, are summed up by the professor, and of that review the following account is merely an abridgment:—

1. Perfectly fresh farm-yard manure contains but a small proportion of free ammonia.

2. The nitrogen in fresh dung exists principally in the state of insoluble nitrogenised matters.

3. The soluble organic and mineral constituents of dung are much more valuable fertilizers than the insoluble. Particular care, therefore, should be bestowed upon the preservation of the liquid excrements of animals, and for the same reason the manure should be kept in perfectly waterproof pits, of sufficient capacity to render the setting up of dungheaps in the corner of fields as much as it is possible unnecessary.

4. Farm-yard manure, even in quite a fresh state, contains phosphate of lime, which is much more soluble than has hitherto been suspected.

5. The urine of the horse, cow, and pig, does not contain any appreciable quantity of phosphate of lime, whilst the drainings of dungheaps contain considerable quantities of this valuable fertilizer. The drainings of dungheaps, partly for this reason, are more valuable than the urine of our domestic animals, and therefore ought to be prevented by all available means from running to waste.

6. The most effectual means of preventing loss in fertilizing matters is to cart the manure directly on the field whenever circumstances allow this to be done.

7. On all soils with a moderate proportion of clay, no fear need to be entertained of valuable fertilizing substances becoming wasted if the manure cannot be ploughed in at once. Fresh, and even well-rotten, dung contains very little free ammonia; and since active fermentation, and with it the further evolution of free ammonia, is stopped by spreading out the manure on the field, valuable volatile manuring matters cannot escape into the air by adopting this plan.

As all soils with a moderate proportion of clay possess in a remarkable degree the power of absorbing and retaining manuring matters, none of the saline and soluble organic constituents are wasted even by a heavy fall of rain. It may, indeed, be questioned whether it is more advisable to plough-in the manure at once, or to let it lie for some time on the surface, and to give the rain full opportunity to wash it into the soil.

8. Well-rotten dung contains likewise little free ammonia, but a very much larger proportion of soluble organic and saline mineral matters than fresh manure.

9. Rotten dung is richer in nitrogen than fresh.

10. Weight for weight, rotten dung is more valuable than fresh.

11. In the fermentation of dung a very consi-

derable proportion of the organic matters in fresh manure is dissipated into the air in the form of carbonic acid and other gases.

12. Properly regulated, however, the fermentation of dung is not attended with any great loss of nitrogen, nor of saline mineral matters.

13. During the fermentation of dung, ulmic, humic, and other organic acids are formed, as well as gypsum, which fix the ammonia generated in the decomposition of the nitrogenized constituents of dung.

14. During the fermentation of dung, the phosphate of lime which it contains is rendered more soluble than in fresh manure.

15. In the interior and heated portions of manure heaps ammonia is given off; but on passing into the external and cold layers of dungheaps, the free ammonia is retained in the heap.

16. Ammonia is not given off from the surface of well-compressed dungheaps, but on turning manure heaps it is wasted in appreciable quantities. Dungheaps for this reason should not be turned more frequently than absolutely necessary.

17. No advantage appears to result from carrying on the fermentation of dung too far, but every disadvantage.

18. Farm-yard manure becomes deteriorated in value when kept in heaps exposed to the weather, the more the longer it is kept.

19. The loss in manuring matters, which is incurred in keeping manure heaps exposed to the weather, is not so much due to the volatilization of ammonia as to the removal of ammoniacal salts, soluble nitrogenized organic matters, and valuable mineral matters, by the rain which falls in the period during which the manure is kept.

20. If rain is excluded from dungheaps, or little rain falls at a time, the loss in ammonia is trifling, and no saline matters of course are removed; but if much rain falls, especially if it descends in heavy showers upon the dungheap, a serious loss in ammonia, soluble organic matters, phosphate of lime, and salts of potash is incurred, and the manure becomes rapidly deteriorated in value, whilst at the same time it is diminished in weight.

21. Well-rotten dung is more readily affected by the deteriorating influence of rain than fresh manure.

22. Practically speaking, all the essentially valuable manuring constituents are preserved by keeping farm-yard manure under cover.

23. If the animals have been supplied with plenty of litter, fresh dung contains an insufficient quantity of water to induce an active fermentation. In this case fresh dung cannot be properly fermented under cover, except water or liquid manure is pumped over the heap from time to time.

Where much straw is used in the manufacture of dung, and no provision is made to supply the manure in the pit at any time with the requisite amount of moisture, it may not be advisable to put up a roof over the dung-pit. On the other hand, on farms where there is deficiency of straw, so that the moisture of the excrements of our domestic animals is barely absorbed by the litter, the advantage of erecting a roof over the dung-pit will be found very great.

24. The worst method of making manure is to produce it by animals kept in open yards, since a large proportion of valuable fertilizing matters is wasted in a short time; and after a lapse of twelve months at least two-thirds of the substance of the manure is wasted, and only one-third, inferior in quality to an equal weight of fresh dung, is left behind.

We may derive from the repeated study of this valuable report, information which may usefully serve to improve the value of farm-yard manure; and let my readers remember that any improvements made in this direction, have the great advantage of being commonly made without any outlay of capital. The value of the nitrogen thus acquired or saved, let us mark, is not balanced by a bill for guano; there is no additional expense for cartage; the soil, by such improvements, keeps its own; the atmosphere receives fewer nitrogenous emanations, and the adjoining waters are unfouled by the drainage of open yards.

STATISTICS OF THE FLAX CROP IN IRELAND.

The first part of the Irish agricultural statistics for the present year, for the early appearance of which we are indebted to the zeal of Mr. Donnelly, the indefatigable Registrar-General, has been compiled; and although it relates to the flax crop alone, it is of considerable importance. It shows the extent of land, in statute acres, under flax in Ireland in the years 1855 and 1856, compiled from the returns collected by the constabulary; and although it will be revised at a later period of the year, and published in a more detailed form, it is not expected that any material variation from the present figures will be necessary. The following is the summary for the four provinces:—

Ulster.—Extent of land under flax, 1855, 87,876 acres; ditto, 1856, 96,911 acres. Increase, 9,035 acres.

Munster.—Extent of land under flax. 1855, 4,252 acres; ditto, 1856, 3,935 acres. Decrease, 317 acres.

Leinster.—Extent of land under flax, 1855, 2,141 acres; ditto, 1856, 3,032 acres. Increase, 891 acres.

Connaught.—Extent of land under flax, 1855, 2,772 acres; ditto, 1856, 2,948 acres. Increase, 176 acres.

Total for Ireland.—Acreage under flax in Ireland, 1855, 97,041 acres; ditto, 1856, 106,826 acres. Increase in 1856, 9,785 acres.

Extent of flax grown in Ireland in each of the following years: In 850, 91,040 acres; 1851, 140,536 acres; 1852, 137,008 acres; 1853, 174,579 acres; 1854, 151,403 acres; 1855, 97,841 acres; 1856, 106,826 acres.

The principal increase in Ulster has been in the counties of Armagh, Donegal, Down, Londonderry, and Tyrone. In Munster there has been a large decrease in Cork, and an increase in Kerry. In Leinster there has been a considerable increase in Wexford; and in Connaught some increase also in Mayo and Roscommon.

ON THE COMPOSITION OF THE WATERS OF LAND DRAINAGE AND OF RAIN.

There are some advocates for deep drains, who insist on a minimum depth of four feet on all soils. This opinion, we believe, has received the sanction of the Inclosure Commissioners; and a landower draining his estate with borrowed capital, and charging the inheritance with it, would not be allowed to do so except with drains of this minimum depth. An extra foot of depth adds considerably to the expense of draining; and this extra expense we are to incur for what are called the collateral advantages. The principal of these collateral advantages are defined to be the ammonia, the nitric acid, and the phosphates which the soil absorbs from rain-water. On former occasions we have called upon the propounders of the doctrine to state the money-value of the collateral advantages to be obtained by making the rain filter through an extra foot of soil, and to show that it is equal to the expense incurred by that extra foot of depth. The paper by Professor Way, in the last number of the "Journal of the Royal Agricultural Society," on the composition of the waters of land drainage and of rain, sets that question, we think, completely at rest, although his former researches appeared to give some countenance to it. His summing-up is nearly in the following words:—1st. It appears that through every acre of land, whether naturally or artificially drained, there passes annually a quantity of water equal to 42.4 per cent. of the rainfall; and that in those districts where the rainfall amounts to 25 inches, the quantity of drainage-water is equal to about 240,000 gallons in that space of time. The next conclusion is this—and a very important one it is—that even when the land is very highly-manured, this large quantity of water removes from the soil only inconsiderable portions of the most important mineral ingredients—namely, potash and phosphoric acid. With respect to ammonia, it appears that the quantity carried off from the land by drainage-water is also inconsiderable, but that nitrogen in the form of nitric acid is to be found in very large quantities in the water of land-drainage, particularly that derived from highly-manured land. It further appears, as the result of these investigations, that the quantity of nitrogen, in the form of ammonia and nitric acid, in rain-water, is very much smaller than has been supposed, and quite inadequate of itself to account for the natural fertility that has been ascribed to it. It appears also that it is to these substances as existing at all times in the air, and absorbed from it by the soil and by plants, especially the former, that we are to look for an explanation of such natural phenomena. The quantity of ammonia in rain is greater than in drainage-water, which sufficiently attests the absorbing power of the soil for this alkali; but the nitric acid in rain does not account for the quantity found in drainage, even in the instances where it is present in the smallest quantity. Professor Way further continues that in all probability this nitric acid is due to the oxidation of the nitrogenous matter of manures, and especially takes place where such manures are of a nature to prevent their perfect admixture with the soil. The more perfect admixture of manures with the soil is suggested as the best means of preventing so important a loss. The best method of effecting this complete admixture is left to the judgment of practical men. Lastly, Professor Way, in taking leave of this subject, for the present, draws attention to the propriety of employing the drainage-water of highly-manured land, for the irrigation of meadow land in the neighbourhood. In support of this recommendation, reference is made to the employment of surface drainage-waters by Lord Hatherton at Teddesley, and by the Duke of Portland at Clipstone. It is also stated that the drainage-water from some of the fields of Mr. Paine, the analysis of which demonstrated so great a loss of nitric acid, produced the utmost luxuriance in the grass of a meadow over which it was allowed to flow.

With respect to the data on which these calculations were founded, the annual rainfall was assumed at 25 inches, because it fairly represents the quantity observed in the districts from which the principal samples of drainage-water were taken—a quantity which must be increased by one-half for the western counties, and to a still greater extent for Ireland. The quantity of water finding its way into the drains is deduced from a table published by Mr. Parkes, from which it appears that 42.4 per cent., or in round numbers 2-5ths, passes through the drains—this number being the average of five years, which vary within rather wide limits, being in one case as low as 33, and in another as high as 57 inches. This wide variation is thus accounted for:—In heavy rains, and when the soil is already saturated with moisture, all the water which falls, if it does not flow over the surface, will find its way into the drains, there being at such times little opportunity for evaporation. When, on the contrary, the rains are intermittent and comparatively light, with intervals of warm sunshine, the quantity of water which would suffice to saturate the land is carried off by evaporation before the next shower, and none at all reaches the drains. In these calculations the annual rainfall is not the only point of importance: the rate at which it falls in a given time is a very material element. From data furnished by Mr. Lawes, Professor Way was enabled to calculate the amount of nitrogen furnished by the rain in each month. While the total quantity during the year amounted to 5·63 grains, the monthly quantity fluctuated between less than 2 and more than 10 grains. The importance of these results must be obvious, not only as affecting the question of drainage, but from their bearing on other questions of great importance, which have lately attracted much attention. Professor Way considers that the estimates which have recently been formed of the quantities of ammonia and nitric acid in rain, are totally erroneous. With respect to an examination made by himself of the rain falling at Pusey, he regrets that it was published without the caution which in his report he recommended with regard to the figures. He was perfectly aware of the unsatisfactory nature of the methods of analysis employed, although they were the best then existing. The paper concludes with a description of the methods of analysis adopted on the present occasion, in conducting this very important but very difficult inquiry.

This article therefore disposes of the collateral advantages, as they are called, of deep draining derived from the extra quantity of nitrogen, phosphates, and so on, to be obtained by the percolation of rain through an extra foot of soil. A minimum depth of four feet, under all conditions of climate, and on all soils, and under all conditions of rainfall, may be quite right; but it must be founded on some better reason than the benefit to be derived from the nitrogen and phosphates which it is to abstract from the soil. We must confess that we have never heard this reason. As matters now stand, he who drains with borrowed capital, and charges the inheritance with the outlay, must have no drains less than four feet deep, because the Inclosure Commissioners have willed it so. Complaints have been made, that on this point the public mind is unsettled; and we cannot help thinking it is well that it is so.

WHAT IS GOOD FARMING?

What is good farming? How is it that a man should farm, to do the most credit to himself and his landlord? It is the general question that must here be considered. A crop of mangels, a herd of cattle, or a sample of seeds have made many a one's fame ere now; though, after all, these can only be individual items in the account. It is the uniform and methodical excellence of a system that in the long run will be the most likely to pay. To be sure, some have wooed fortune, and wooed her well too, by directing their energies more particularly to one especial branch of the pursuit. Such, however, at best can be but exceptional. Their very success depends on there being but few others anywhere near an equality with them. Whereas good cultivation, on a limited area like ours, can never extend too generally; while, were we called on to fashion a model farmer, we can only repeat that we should have him to mainly depend on the thorough harmony of his arrangements. Like an accomplished musician, or a real gentleman, there should not be a note out of place, or an ornament but was warranted by its use.

And why not have a model farmer? We have prize oxen, renowned sheep, and famous pigs. Beyond these even, despite the flow of ridicule with which it was so long attempted to swamp the effort, we have still premiums for good labourers. Each, in their several ways, has been found to answer. No man yet was ever the worse for a little well-merited distinction. And we believe that agriculture would suffer no harm from having a few more of her model-men to point to—some one beyond Mr. Hudson, of Castleacre, on the one part, or Mr. Mechi, of Tiptree Hall, on the other. The Duke of Northumberland thinks so, too. His Grace, indeed, last year acquired some not very enviable notoriety when first putting this opinion into practice. It was made to appear that a landlord offering a premium for a well-cultivated farm was only seeking an excuse for raising the farmer's rent. Such a deduction, moreover, coming, as one act did, immediately on the other, was unfortunately considered but too logical; and prize-farming, accordingly, did not promise to prosper.

His Grace has still had the determination to carry out the idea. This is the second year of the Stanwick adjudications; from the conditions of which we may reply to our own inquiry, and show how, in the North at least, a good farmer is reckoned up. It was, then, intimated that the award would be given for "good cultivation, state of fences and gates, roads, water-courses, buildings (as far as depends on tenants), live-stock, implements, best-kept accounts, use of artificial manure, or the contrary, and including everything connected with good husbandry. To be adjudged by three competent judges, when the crops were near maturity, but before cutting had commenced; probably in the month of August."

There is little to quarrel with here. In fact, the announcement alone should be something of a lesson, and induce many a man—as no doubt it has some already in the district—to put a homely question or two as to his own proceedings. How would his fences, roads, and water-courses show? A bad beginning, we are afraid, for not a few of us. Are his buildings in good order? The live-stock of the recognized breeds? His implements up to the spirit of the age, and really adapted to the requirements of good farming? And then, another grave point, does he keep his accounts fit to be seen and tested? There is of course a vast deal more implied in "good husbandry;" but the items named are not only of themselves suggestive, but have the merit of calling attention to matters too often overlooked or disregarded. Some men, strange as it may sound, farm well, or at least to a profit, with ragged fences, bad roads, a poor homestead, inferior stock, the implements of "other days," and no accounts at all! The definition, so far as it goes, is useful enough, and whatever effect it may have on his Grace's own tenantry, we shall, by making it more public, strive also to render it more generally serviceable. "Am I a prize farmer?" let every one ask of himself—"That is to say, in addition to good crops, have I good fences, good roads, good water-courses, good buildings, good stock, good implements, and good accounts?"

Mainly owing, no doubt, to the ill-advised proceedings which followed the adjudication of last year, the competition on this occasion was but small. Although ranging much beyond the limits of the Duke's own property, there were in all only five entries—three for the fifteen pounds prize for a farm not exceeding two hundred acres, and two for the thirty pounds for any farm over two hundred acres. Of these five but two were from his Grace's own tenantry, one in each class, and neither successful. It will be seen, however, from the award, that both were commended:—

"We, having been appointed to award the prizes given by his Grace the Duke of Northumberland, of £30 and £15, for the best-cultivated farms within the townships of Stanwick, Aldbrough, Melsonby, Gayles, Dalton, Forcett, Eppleby, East and West Layton, Caldwell, Barforth, Cliffe, Manfield, and including all tenants of his Grace in Yorkshire, hereby award to Mr. Richard Kay, of Forcett Valley, tenant of John Mitchell, Esq., of Forcett, the sum of thirty pounds, being the sum to be awarded for the best-cultivated farm exceeding two hundred acres; and to Mr. Francis Dent, of Caldwell, tenant to Lord Alford, fifteen pounds, being the sum to be awarded for the best-cultivated farm not exceeding two hundred acres: these premiums being awarded with reference to the cultivation of the farm, the state of the roads, fences and gates, water courses, buildings, live stock, implements, best-kept accounts, the use of artificial manure, and including everything connected with good husbandry. We think it right and just to state that the cultivation of the farm of Aldbrough, by Mr. Clark, is very much improved since last year, and his crops are most satisfactory in consequence; and that we highly commend Mr. Golightly, of Grey Stones, for his industry and good management.

"EDW. LAWSON, JOS. SNOWBALL, R. J. WILEY.

"Dated this 27th August, 1856."

The effect of all this, we repeat, despite the disadvantages which attended the first broaching of the experiment, can scarcely fail to be of some service. It will lead men to think, as well as to examine more carefully into their own practice. Mr. Clark, who, in one season, has "very much improved," may by another be the prizeholder. How much of this improvement he owes to the spirit of emulation thus raised within him, we will leave to others better acquainted with the neighbourhood to decide. To us it reads very like a strong example in favour of the plan.

As our readers may remember, we were by no means chary in what we had to say on Mr. Wetherell's case. At the same time, such a mistake must not deter us from giving credit where credit is due. The Duke of Northumberland is at any rate endeavouring to advance the agriculture of his own district, while it is not at all so sure but that he has found one of the best ways of doing so. Only let the remembrance of the first essay be removed—it is very certain that such a "return" can never be repeated—and the competition will extend to something like what it should be. Beyond this, the farmer himself should have more voice on the occasion. As at present carried out, it sounds only like good farming for landlords—the judges being the agent of Lord Eldon, the agent of Lord Redesdale, and the agent of the Duke of Leeds. High individually as these gentlemen are known to stand, their association here is clearly a mistake. To have the award read becomingly, let each class have its representative. Let the judges still be three in number; but let there be one landlord, one agent, and one tenant amongst them. Every competitor will then take his allotted place with far better grace. For, depend upon it, to try good farming, a judge and jury of land-agents only will never do.

COMMON THINGS IN AGRICULTURE.

Whatever advantages agriculture may derive from the recent exhibition at Paris, and from those of the Royal and other Agricultural Societies of England, there can be no doubt that they are communicating a vast amount of knowledge of common things to the non-agricultural portion of the community. The time is gone by when a lady of fashion would ask Bakewell, the geologist, as he was asked, whether he was any relation to the Mr. Bakewell who *invented* sheep? That elegant, that refined and refining portion of the community are no longer in danger—thanks to our poultry shows—of exclaiming, as the high-born belle exclaimed, when she saw poultry in a farm-yard, "Are these chickens? I thought chickens had a liver under one wing and a gizzard under the other."

There is another portion of the community which has benefited from the Christmas shows of the Smithfield Club. The veriest cockney now knows the distinction between short-horns and Devons, Downs and Leicesters: he is no longer liable to mistake turnips for wurzel, and, thanks to agricultural literature, has even become great in the art of growing them. Our Lord Chancellors and judges are no longer liable to fall into the error made by the late Lord Erskine, at Holkham, when he mistook, or affected to mistake, a crop of wheat just coming into ear for lavender. The Tiptree gatherings, at any rate, to Aldermen and Common-councilmen are invaluable, not only for their good cheer, but for the knowledge of rural affairs which they impart to an important class of consumers—important alike for the quantity and quality of what they consume. Returning, however, to the agricultural class, the exhibition of agricultural machinery has a very beneficial effect in removing prejudices against machinery from the minds of the rural labourers. Crabbe, in his tale of the "Gentleman Farmer," describes one of the farmers of those days, who was as much behind the more advanced farmers of 1856, as he himself was in advance of another class of his agricultural cotemporaries, whom the poet places in contrast with him in the following lines—

> "He was of that dull race, who ne'er had seen
> Corn sown by drill, or thrashed by a machine."

Now, the most ignorant little urchin that holloas off a crow has seen both operations performed; and among labourers of a higher class, many are the arguments held at the village alehouse over the prospects of the steam-plough and the reaping machine.

Let us pass, however, to other topics suggested by these exhibitions; and firstly, to the question—is the breeding of prize animals a profitable business, or was the farmer right, who, when asked why he did not breed short-horns for the foreign market, replied that, with all the prices they realized, he preferred wheat-growing at 60s. a quarter. Perhaps he was right. Notwithstanding the large income realized by letting rams, it is well known that the celebrated Bakewell became a bankrupt; and, if the balance-sheet of some of our most celebrated breeders of stock which have brought the highest prices, were exhibited, we doubt whether there would be a large balance on the right side. And yet, if not profitable in themselves, they are conferring, and have conferred great benefits on the community, by giving us breeds of stock, with such a propensity to fatten at an early age, that it is difficult to keep them lean. Stock-breeding of this kind, like amateur farming, may be of great public benefit to the community without being in itself very profitable. Farming may be a losing concern to a landlord, in one point of view, and profitable in another, by the stimulus which it gives to improvement among a tenantry who farm for a livelihood. The farming of the late Lord Leicester was not profitable *per se*, but it converted West Norfolk from a rye-growing to a wheat-growing, wheat-consuming, and wheat-exporting district, and raised the value of Holkham and many of the neighbouring estates ten-fold.

The next question is—what are our breeds of cattle which are likely to be in the greatest demand on the Continent, as being best adapted to the present state of foreign agriculture? We should reply, our best native breeds. The French appear to have very much had their own opinion, for they were extensive purchasers of the Scottish breeds—the Ayrshire and the Galloways; although in the highly-famed districts of England, the latter, as grazing animals, are being more and more superseded yearly by the short-horns. What figure would one of our best-bred shorthorns cut on a Swiss mountain? In the coffee-room of one of the hotels at Chelmsford, we met with a Swiss gentleman, who was consulting the farmers assembled over their dinner as to the native locality of our shorthorns, what kind of milkers they are, and the fairs or markets, as well as the prices, at which they could be bought? On all these points he received, of course, the most ample information; but the general opinion appeared to be, that some of our smaller breeds would be better adapted to the climate and the kind of pasture which they would find in this new country. Our agriculture is in a highly artificial condition, and our most improved breeds are artificial too. In a state of nature, as in the case of the wild cattle of America, they would revert to the normal type again, and to one uniform colour, like the wild cattle of Chillingham Park. Another thing which is certain is, that it is impossible to combine, in the same animal, the perfection of qualities for the dairy and for grazing. For these reasons, therefore, valuable as the shorthorns are, we should be loth to see them supersede altogether our Devons and Herefords, our Ayrshires, and Galloways, or even our Highland or Welsh runts. It must be admitted, still, that, with the extended demand for beef and mutton, which consumption by the millions is producing, there will be an increase in the demand for that description of stock which produces the largest amount of meat in the shortest time.

CHARACTERISTICS OF WHEAT.

(SECOND SERIES.)

BY AN OLD NORFOLK FARMER.

SOWING.

Wheat being both a biennial and an annual plant, the proper period of its sowing extends from June to November for the biennial or winter wheat, and from February to April for the annual or spring wheat. Owing to the want of time to prepare the ground, and other obstacles, and, in addition, the value of the after-grass for the support of the cattle and sheep kept upon a farm, the sowing of biennial wheat never commences until after harvest; yet it is a question whether, if the sowing began in June and finished before harvest, it might not yield a much greater quantity of green food for sheep and cattle than the after-grass or clover. But a more important advantage would accrue from sowing both early and deep, which is the prevention of injury from atmospheric and other influences. The wheat plant has a double set of roots, namely, the seminal and the coronal roots. The former spring from the germ of the seed, and nourish the young plant in its incipient state until the first knot of the stem or joint has acquired sufficient solidity and hardness to throw out the coronal roots, which invariably form just beneath the surface, and, shooting obliquely into the soil, contribute to the subsequent nourishment of the plant. In a loose soil, the seminal roots strike downward to a considerable depth; they have been traced as much as six feet below the surface in a sandy soil, evidently to reach the water. They are connected with the coronal roots by a pipe, which, in fact, is the first joint of the stem; this pipe is longer or shorter according to the depth at which the seed is buried in the earth. If this is superficial, no coronal roots are thrown out. I have now before me several plants in which this is the case, the whole of the roots springing from the bottom of the stem. This shows the advantage of deep as well as early sowing for winter wheat, which is thereby protected more effectually from those accidents to which it is liable, especially the root-fall, which, as I have before described, is occasioned by the frost laying bare the roots; now it is evident that early and deep sowing must necessarily render it less liable to this disease. By the former, the plant gains strength to resist atmospheric influences; whilst the latter gives it a hold upon the soil, which places it out of danger from the root-fall.

With regard to the collateral advantage of early sowing —namely, the supply of green food for sheep—there is no doubt that it would also prove beneficial to the wheat crop, as well as profitable in a grazing point of view. It was much more practised formerly, before the turnip husbandry was introduced, which rendered it less necessary; but I believe it was attended with beneficial effects in every respect. I have a statement before me—taken from a work ("A General Treatise on Agriculture") published about the middle of the last century—which estimates that two acres of wheat, early sown, "would feed fifty sheep of the largest size," yielding a profit of four shillings each. At that period the turnip husbandry was in its infancy; and the whole account is so illustrative of the system of agriculture at that period, that I will transcribe it for the satisfaction of your readers.

"The largest produce of an acre of wheat land seems to be ten quarters per acre. Mr. Yelverton, of Ireland, in 1742, had from one acre (English measure) thirteen quarters two bushels. The following is the account of the expenses of cultivating ten acres of wheat, and its net produce for four years, the four-shift course of husbandry being then practised, as follows—1st, fallow; 2nd, wheat; 3rd, barley; 4th, oats.

EXPENSES 1ST AND 2ND YEARS.

	£	s.	d.
Rent, at 12s. 6d. per acre (two years)	12	10	0
Four ploughings, at 12s. 6d. per acre	6	5	0
Three harrowings, at 2s. ditto	1	0	0
Thirty chaldrons of lime, at 8s.	12	0	0
Seed corn, 2 qrs. 4 bush, at 35s. 5½d. per qr.	4	3	7¾
Two weedings, at 1s. 6d. per acre............	0	15	0
Reaping, at 4s. ditto........................	2	0	0
Carting and stacking, at 2s. 6d. ditto..	1	5	0
Tithe, 5s. ditto	2	10	0
Thrashing, ten days' work at 1s.	3	0	0
Fencing	1	5	0
	46	13	7¾
Third year, barley.........................	22	4	8½
Fourth year, oats	19	8	10½
Total,.................	£88	7	2¾

PRODUCE 1ST AND 2ND YEARS.

	£	s.	d.
Where wheat was sown early, 10 acres would feed fifty sheep of the largest size, which would yield a profit of 4s. each............	10	0	0
Mean crop, 4 qrs. per acre, at 35s. 5½d. per qr.	66	18	4
Straw, 130 thraves, at 1s..................	6	10	0
	83	8	4
Third year, barley..........................	48	0	0
Fourth year, oats	35	3	9
Total............	166	12	1
	88	7	2¾
10)	78	4	10¼
Four years' profit per acre	£7	16	5¾

Here it will be seen that the green crop of the wheat constitutes one-eighth of the gross produce of the first and second years, the former being a fallow, and therefore non-producing. The adoption of summer-sowing can only be effected by breaking up the clover-ley the first year as soon as the crop is mown, and either dibbling it at once, or giving it a slight summer tillage before drilling, which latter mode has been found to be the most favourable for a crop of wheat.

On this subject, the same author remarks—

"I own I am at a loss to account for the wheat thriving better on lands that have been ploughed some time than it does on fresh-ploughed lands when dressed as well or better; but I have often tried both ways on the same lands, and always found the former answer best."

The fact is, the comminution of the fresh-ploughed soil is not so complete as that of the land previously worked. Another experiment is recorded, that shows the advantage of breaking up the clover-ley thoroughly before sowing. A farmer had found his wheat constantly subject to the root-fall when sown upon clover-ley once ploughed. Instead, therefore, of ploughing, he scarified the land cross and cross several times, by which means all the plants of clover were brought to the surface. These, after a few days' drying, were carted off to the farm-yard; and the wheat was immediately drilled in upon the loose pulverized soil, as it was left by the scarifier. This plan fully succeeded, as the wheat was from that time entirely free from the root-fall. And, on the other hand, the clover roots were equally saved to the farm, being converted into manure, and returned to the land. The farmer who tried this experiment was so well satisfied with the result, that he has ever since pursued the same plan with his clover-leys, and has had no reason to complain of the root-fall.

It has been found, also, that wheat sown on clover land that has been fed is more liable to the attacks of insects, in the spring of the year, than that on land that has been mown twice. This can only be accounted for from the smell of the manure dropping from the sheep and cattle attracting the worms, grubs, or insects, which at that season of the year are revived by the recurrence of warm, sunny weather.

Several farmers complained of this, during the last spring, when these enemies of the wheat crop were peculiarly active, and destroyed many hundred acres of wheat plant. The only specific against this evil is the application of a dressing of lime before the wheat is sown, which will destroy the eggs or larvæ of the insect tribes, of which there are twelve different species that attack the wheat in its several stages of growth.

Much has been said and written on the subject of thick and thin sowing; and the advocates of the latter system have certainly adduced many startling facts to prove its superiority. It is the almost universal practice to sow from one to two bushels per acre, according to the quality and condition of the land, a thin poor soil requiring more seed than a deep rich one; yet so prolific is the wheat plant, and so much does it spread by tillering, that on good land single grains may be planted to advantage at distances of from three to twelve inches apart from plant to plant, and at least a foot distant from row to row. It is acknowledged, however, by the patrons of thin sowing that the crop is more liable to the mildew than where the plants stand closer. Whether this fact—which has, we believe, never been accounted for—would be remedied by summer-sowing, which would afford the plants more time to spread, is a question which experience alone can solve. A remarkable case is recorded in the "Philosophical Transactions" (vol. lviii., p. 203), and quoted by Sir H. Davy in his book on Agricultural Chemistry, of the prolific properties of the wheat plant. It is there stated that "Mr. C. Miller, of Cambridge, sowed some grains of wheat on the 2nd of June, 1766; and on the 8th of August *one plant* was taken up and separated into eighteen parts, which were replanted. These plants were taken up again, and subdivided in the months of September and October, which sub-division produced *sixty-seven plants.* These were replanted separately, to stand the winter, and were again taken up finally in March and April, and separated, which produced *five hundred plants.* The number of ears formed and matured from this single grain of wheat, in one season, was 21,109, which yielded *three pecks and three-quarters of corn*, weighing forty-seven pounds seven ounces, and estimated to contain 576,840 grains."

TILLERING.

On this subject most, if not all of the writers have fallen into a singular mistake as to the origin of the tillers of cereal plants. It is laid down by them as an established fact that the tillers proceed from the coronal roots, which *invariably* form on the plant just below the surface of the soil. This is so confidently laid down by every writer I have consulted, that I took it for granted that it was correct; until having recently had extensive opportunity of examining for myself, I have at once discovered, what any other person may do with very little trouble, that the tillers *do not spring from the coronal, but the seminal roots;* and that, in point of fact, the former, so far from being an essential appendage to the plant, are entirely accidental in their formation. They proceed from the first knot or joint formed in the stem, *provided* that knot is beneath the surface; but if, as is frequently the case, it is *above* the surface of the soil, no coronal roots are formed, and the plant is wholly supported by the seminal roots, which in *all* cases constitute the main source of nourishment to the plant. I have now under examination the stubble of a number of plants of this year's growth, some of which have from 25 to 30 stems. In all these the tillers spring from the seminal roots, without any exception. Some of them throw out coronal roots; but others, which have no knot below the surface, have also no coronal roots, but are equally strong in the stem and heavy in the ear.

I have laid the more stress upon this circumstance, because even Le Couteur has fallen into the same error, and written upon the presumption that the coronal roots are an essential and invariable part of the plant; leaving his readers to infer, that without them there would be no tillering. This also has led to another error, namely, that after a certain time (supposed to be the month of April) the seminal roots cease to impart nourishment to the plant, which then and after derives its support from the coronal roots alone. It was in an investigation of this assumption that I discovered the errors regarding the tillering question; and I therefore request those who have taken up with the commonly-received view of the case, to do as I have done—examine for themselves; and they will have no difficulty in discovering the true state of the case. The best way will be to wash the roots first from all the mould, and let them afterwards dry, when the examination can be made with more ease and precision.

The establishment of this fact greatly strengthens the arguments in favour of deep sowing, by which the chance of the formation of a joint below the surface is rendered more certain, which also ensures the formation of coronal roots. These undoubtedly are of great utility in imparting a more firm hold upon the soil, as well as additional nourishment to the plant, and consequently lessens the danger of the corn being lodged.

The fecundity of the cereal plants, and their reproduction by transplanting the offsets or tillers, is truly wonderful. We read of from forty to one-hundred-and-twenty ears being grown from one root or grain; and there is an account in a work by Sir Kenelm Digby, written in 1660, of a plant of barley in the possession of "the Fathers of the Christian Doctrine" at Paris, who kept it for many years as a curiosity. This plant, which was the produce of one grain, had 249 ears, from which were counted above 18,000 grains of barley. In the Cambridge case, which is mentioned above, if the plants were set at one foot distance, it would insure a crop of ten quarters per acre, which under the circumstances was not an apocryphal produce; and as the average number of stems was 42, less than a foot would leave them very much crowded. Thus, there are in an acre 43,560 feet, which, divided by 500, gives 87; then multiply this by 3¾ pecks, the produce of the 500 plants, and we obtain 327 pecks, or about ten quarters per acre. The soil on which this was raised was a light blackish one, with a gravelly subsoil; part was well manured and part without any manure whatever; but there was no perceptible difference in the strength of the straw or size of the ear.

The applicability of the system of the transplantation of wheat, and the separation of the tillers from the main stem, to the general practice of husbandry, is a question which requires time and consideration to solve. At present the mind of the great body of the cultivators is engaged in the question of machinery and cattle breeding; and the more abstruse one of the physiology of plants, and the increase of their reproductive powers, is confined to the application of various kinds of manures. This latter is certainly based upon chemical principles of very great importance, and being of easy solution and less complicated practicability, has been universally adopted. But the natural history of the powers and properties, the habits of plants and principles of vegetation, are of even more importance than the quality and appropriateness of manures; but owing to the thought and study they require, and the tediousness of the processes by which results are obtained, very few indeed will be found to pay any attention to them; and the successful experiments of those who have made the investigation are suffered to fall to the ground.

I believe, however, that the time is not far distant when the reproductive powers of our cereal plants, and especially wheat, will become the question of the day; and that it will be found quite possible to increase their produce to at least *double* what is now obtained. I should be glad to see the attention of not only our men of science, but that of the landed interest, or at least that portion of it who are most forward in agricultural affairs, directed to this question, which is of far greater moment to them, as well as to their tenants, than many subjects which now occupy them almost exclusively. The consumption of cereal food is rapidly increasing in this country, and must continue to do so in a geometrical ratio, the increase of the population being now at the rate of a thousand per day; and as this is not the only country in which the first law of nature, "increase and multiply," is obeyed, both in the spirit and the letter, one may look for the time when, without an increase in the production, the population of Europe will find difficulty in procuring food to supply their teeming millions.

WHERE DOCTORS DIFFER, WHO IS TO DECIDE?

In agriculture, as in politics, the main object of many is either to pervert or render the truth obscure. In a pursuit the most natural as well as the most useful, the utmost diversity and dissonance of opinion is found to prevail. What with prejudice on the one hand, and speculation and theory on the other, we are danced about in the maze until we become tired out, or, like some wight in pursuit of the Will-o'-the-wisp, we press onward until at length we find ourselves up to the chin in mire.

The fact is, that every one not only rides his own hobby, but also endeavours to convince every one else that his is the best animal going. In England we are told we must go to Scotland to see good farming; in Scotland, with the same desire, the natives, true to their character, travel to the South, finding in that genial clime everything to admire, and returning home to again relate to their astonished countrymen the wonders they have witnessed.

It was only two years ago that the Tiptree meeting produced subjects for discussion that have not yet subsided. Twenty-five tons of *dry hay* per acre soon sank down to 25 tons of *grass*; and, even wonderful as it appeared, another Scotchman, of the name of Mitchell, writes in the *Inverness Courier* newspaper that the produce of clover upon Mr. Mechi's farm this year is 36 trusses per acre, eleven and a half hundredweight per truss, or upwards of 20 tons per acre, and which, he states, yields £6 to £7 per ton.

A Scotch proverb, "That far away birds have fair feathers," fits exactly these observations. Then, again, he informs his countrymen that the produce of the farm is 5½ quarters of wheat, 10 to 10½ quarters of oats, and 7 to 8½ quarters of barley, and the mangold 40 tons per acre. That the sheep bought at 28s. each in May sold in July at 42s. or 44s. each, and the fleeces in addition *ten shillings* each, producing equal to 26s. each per head—that the Italian rye-grass *on poor land* has produced six crops up to July, of a height of from 18 to 24 inches each; and that the five sows produced ONE HUNDRED pigs, at the rate of *twelve pounds* each sow; and that the produce of wheat was effected by sowing *four bushels* of seed per acre. We would weigh these matters as agriculturists are wont to do, and leave them to be further estimated by those who are competent to the task, and enabled to draw sound conclusions upon the subject.

We perfectly well recollect an instance wherein a farmer stated in public, and reiterated it in print, that he invariably grew 40 tons of swede turnips per acre, and that such was then the prospect of his growing crop. Upon several spirited farmers travelling from a distant county to make the inspection, not a turnip could be found on his farm. Another instance was a new cabbage, of which seeds in packets of 20 each were sold at £1 per packet. These cabbages were to be planted by way of ornamental avenues to houses, and as other marvellous appliances; and yet this fellow found numerous customers, if we may judge from the complaints we have heard on the subject.

Then we had the thin-seeders, with their homœopathic proceedings; and even now we still have this theory set up, extolled, and magnified at Maldon, in Essex, and weekly dilated on. The accounts of the Louis Weedon system read like reality itself, yet we have not heard of converts; and the method of growing wheat year after year upon the same soil without ploughing, with a thousand trees in addition to every acre, is among the many only another prodigy.

A northern traveller, in a communication to a contemporary, saw wonderful things in Essex; but he noted little in the management of Mr. Wm. Hutley to admire when compared with the magnificent spectacles that burst upon him afterwards in other directions.

Then, again, take the recent proceedings carried out under the sanction of the Royal Agricultural Society into the account. On all hands it is admitted that the application of reaping machines would be a most desirable accomplishment, and the farmers have been for the last two years anxiously looking for the result. This was so far effected at the Chelmsford Meeting that those who witnessed it went home perfectly satisfied; but, as if delay was of no consequence at the edge of harvest, the decision was *postponed* for a further trial, where it appeared that the very object sought to be attained was that kept most out of sight. The judges, acting under some extraordinary influence or impression, were still *unable* to decide; so they split up the prize into shares, giving to the one that *executed the reaping best* the third place only on the list.

"Where doctors differ, who is to decide?" and what with exaggerations on the one hand, and misrepresentations upon the other, the agricultural community, to use an Irish phrase, are *bother'd*, and the would-be agricultural community misled.

It is high time that men dealing with practical subjects should fairly state the facts as they become deduced by their experiments; that systems of management of one county should not be got up merely in opposition to those of another; and that persons writing up this or that mode of farming should endeavour to obtain facts in relation to the subjects upon which they do write, and afterwards faithfully record them. Otherwise we fear that agriculture will scarcely advance in proportion to the means employed, and that much of our so-called information will still be regarded as but "a mockery, a delusion, and a snare."

AGRICULTURAL INNOVATIONS.

GRAIN-DRYING IN THE BULK.

In order to obtain a fair estimate of the various "innovations" which are now occupying, or are likely soon to occupy, the attention of the agricultural public, and from thence to predicate their results on the future of the art, it will be necessary to take a rapid glance at those which have already exercised so beneficial an influence, and which have tended to raise agriculture to its present state of comparative perfection. Nor will this glance—although necessarily going over ground every step of which must be familiar to many of our readers—be altogether wanting in utility. We are all of us too apt to look upon a "new thing" as a "dangerous thing" to meddle with, and in our conservation of old, to be jealous of new plans. We are therefore all the better of being now and then reminded that the very plans which we are so fearful of being deprived of, by the substitution of others, were in former days innovations upon former practice, and raised the same feelings in the minds of our forefathers, and excited the same jealousy, as those of the present time, which we now view with distrust, or at least indifference. It is good at times for us to speculate as to what may be from what has been, and to endeavour to realize what would *now* have been our position, social and political, had the "stand-stillites," or the adherents of the "old school," been able, when the "go-aheads," or members of the "new school," proposed to introduce those mighty agents of our national wealth, *then* to have strangled them in their very birth.

In early times, when the population was scattered widely over the land, and their wants were few or easily satisfied, the spontaneous products of the soil, scanty as they were, would amply suffice. But as the people increased in numbers, and civilization progressed, attempts would be made to extend the products of the land, in number and quantity, by the efforts of industry and skill. The cereal crops would in time be discovered, and farinaceous food take the place of, in great measure, or at least supplement, the spontaneous products of the soil. But the system of culture this discovery inaugurated would likely be confined solely to the preparation of the land to receive the seed, not to any attempts to stimulate its productiveness. What the land naturally yielded would be considered as the extent of its capability. The nature of all agricultural processes must thus have been for long of extreme simplicity; and attempts at progress must have been greatly retarded by the devastating wars and the civil discords which for many ages afflicted all the nations of Europe. The husbandman for long time reaped his scanty crop beneath the shade of the feudal castle, and was ready, at the shout of the warder or the sound of the trumpet-call to throw down his sickle, and seize the sword; and it was long ere he left this sheltering shade, and cultivated the valleys, and crept up the hill-side, dotting the smiling landscape with his flocks of sheep and cattle, and adding to the beauty of the scene by the glistening glories of the summer corn. But long after intestine wars had ceased in our country, and when the rusty firelock and the notched sabre were the only relics of the troublous times we have alluded to, agriculture still presented torpid symptoms, and little evidence was shown of the desire to increase the natural productiveness of the soil by improved methods of treatment.

But the rapid increase of our population, and the peculiarities of the climate, the length of the winter, and the uncertainty even of the favourable months, the comparative scarcity and dearness of land, with the existence of a higher degree of exhaustive property in the cereals than in other and more favourably-situated countries—all tended to a quickly progressive though peculiar system of culture. The productiveness of the soil raising our cereal crops depending so evidently upon the quantity of manure, it became a matter of vast importance to secure a supply of this by a greatly-increased stock of cattle. But this involved the necessity to produce large supplies of food; to meet which, the plan of having half the farm in grain crop, and the other half in pasture, was not at all competent. So long, then, as the stock was maintained, or attempted to be maintained, in open pasture fields, which were liable to be frozen or covered with snow during that portion of the year in which the growth is naturally the poorest, so long was there a limit to the increase of stock and that of the cereal crops. But the difficulty was met by the introduction of the "green crops" and the "four-course system" of rotation. This formed the key to the problem which had so long attracted the attention of agriculturists—the increase of extent of soils calculated to raise cereal crops, and the increase of the fertility of those already under cultivation, and the increase of means to maintain large numbers of cattle to ensure the requisite supply of manure. With the increase of "green crops culture" came the increase of stock, and with this the increase of cereal cultivation. Once fairly established, this grand system gave a wonderful impulse to agricultural improvements, and these followed in quick succession. Indeed, the very exigencies of the system created the impulse for improvement. To fit the soil for the reception of manure, it was subjected to a complete and thorough movement, or pulverization: this bringing with it the great advantage of allowing the air to permeate through the soil, and to nourish the plants. But certain soils were incapable of being so operated upon, as in the case of thoroughly wet soils; *drainage*, thorough and complete, was then carried out; and this, one of the most important of our mechanical means of improving the soil, was found to bring an immense amount of advantages with it. The soil once improved by draining, auxiliary operations were easily and usefully applied. Under the old system, the preparation of the land was confined to a mere scratching of the surface; but with drainage, and a knowledge of the vast benefits derivable from allowing the air to permeate the soil, came subsoiling, deep ploughing, and trenching.

All those operations involved mechanism more or less complicated, the manufacture of which gave rise to a distinct branch of trade employing numerous hands, and called into existence a large amount of engineering science and mechanical skill. With mechanism for the field came mechanism for the farm steading, to aid the farmer and reduce the amount of manual labour: steam was employed to drive the thrashing machine, to cut the corn and the turnips, and to bruise the grain and the oil-cake, which the researches of the chemist and the physiologist had shown to be necessary in order to obtain well-fed animals quickly and economically. With these improvements came naturally others having reference to the housing of the stock; and in process of time the littered and exposed farm-yard and the ricketty tumble-down sheds gave place to the well-arranged and comfortable stalls and yards, and the neat appearance of the modern "farm steading."

A knowledge of the constituents of plants and of soils, which chemistry had made known to the farmer, brought with it a knowledge of "specific manures," and the wide field for the exercise of research and experiment connected with it.

In thus rapidly glancing at those successive improvements which have given agriculture a high status as a scientific pursuit, it should never be forgotten that all those grand improvements were at the time of their introduction hailed as improvements by very few, and these the enlightened and the far seeing; while by the great majority they were treated as day-dreams—the innovations of theorists merely; and, indeed, it would be no difficult task to find some farmers, even now, who look upon many of them with the supremest contempt. Great as has been the result of these innovations, we believe that we are on the eve of witnessing others greater still, and more wonderful in their influence upon the progress of the art. It behoves all those who wish to move along steadily with this stream of progress, to watch narrowly and examine closely the nature and the principles of all innovation in practice, with a view to appropriate to himself such of the knowledge as it affords, which may be beneficial to him in his daily operations. True, many of these proposals may be purely speculative, shooting far a-head of the probable capabilities of the department in question; nevertheless, it will be the better course—and he will be the wiser man who adopts it—not to start up and turn from these speculations with contempt or indifference, but to study them carefully, throwing aside the worthless and storing up the valuable portion. For it must indeed be a wretched speculation, and one utterly unworthy of the name, that affords nothing good or suggestive. Indeed, if there is one thing more startling than another in the records of improvement or invention, in any or all of the branches of science or manufactures, it is just this—the crude and ill-digested hints and speculations scattered through the writings or developed in the practice of the most common-place of men, which taken up by men of genius, have been to them the clue or key to the most brilliant of discoveries. It would be easy if necessary to give ample and interesting proofs of the truth of this. As it seems to be the privilege of the chemist of modern times to extract from worthless materials others of a high value; so is it the privilege of the man of genius to turn to good account the otherwise worthless rubbish of other men's speculations—his mind is like the fabled philosopher's stone, which turned all that it touched into gold.

Of the numerous "innovations" now before the public, we propose in the meantime to direct our attention to two only: (1) "The preservation of cut grain from the contingencies of the weather, its speedy housing, and its preservation;" and (2) "Steam culture;" glancing as briefly as possible at what may be termed the "philosophy" of the processes.

In connection with the first of these subjects, one obvious point for consideration is, the inconsistencies traceable—in wet weather calculated to make the lesson all the more telling in its effects—between the field practice during the operation of harvesting, and the beautiful mechanism by which it and its preceding operations have been effected. A glance at the barn machinery and the field implements, all designed to do their work quickly and economically, each stamped with the mission of a mind operating upon material to make it do its master's bidding—and a glance thereafter at corn sheaves standing exposed to the pelting of the pitiless rain, each hour so exposed becoming more and more deteriorated—reveals to our mind a decided inconsistency. It seems as if mind had ceased speculating, and as if man had given up the battle which he has hitherto waged so successfully with antagonistic principles, just at the very period when he should have stepped in and given the finishing blow—the *coup de main*—which would have ensured the victory. All the exercise of care and forethought which have been before this expended for the purpose of producing the crop, and simply for this, is in certain circumstances rendered to a some extent nugatory, from a non-continuance of the same care and forethought. It is like navigating a ship with infinite pains and labour through an intricate channel beset with fogs and quicksands, quite up to the mouth of a safe harbour, but not into it, leaving it outside exposed to the chance of currents and breezes, which may or may not waft it back again to those very dangers, out of which so much trouble has been taken to bring it. A prudent man—a wise one—would deem it his interest to ensure the ship against these adverse chances, and after bringing it up to the harbour would get her into it. There seems to us something like a very ridiculous—with reverence be it spoken—state of affairs in a farmer bemoaning his unlucky fate in having *such* a rain after he has cut his grain, in which it stands soaking, exposed to all the evil influences of such a destiny. Taking up our parallel again—he has brought his ship up to the harbour, can he take it in? Why not? Have the skill and the ingenuity, which have so wondrously aided him up to this point, no power to aid him further? Wherein lies the difficulty *now* which daunts the men who have done such mighty things *before*? Is it easier to plough deep, to clean the crops, and to reap them well and quickly, than to shelter them when so reaped? Must the man who has turned as it were adverse nature to his purposes, and made her the willing slave to do his bidding—must he be foiled at this point? Surely to say so would be a libel on the mechanical genius of the day. There is nothing whatever in the nature of the task to make it even a difficult one to be performed, far less one incapable of being surmounted. Let us see how this is—what men have already thought, and what they are now thinking about it.

R. S. B.

STEAM CULTURE—MIDDLESEX.

During the last fourteen days Mr. John Middleton, Farmer, Steam Farm, Hatton, near Hounslow, and his brother Mr. James Middleton, of Butts Farm, Hanworth, have been ploughing their land with Boydell's Steam-horse, no less to their own satisfaction than that of their neighbours and those who have paid them a visit. The engine used on the occasion was the one exhibited at Chelmsford by Mr. Boydell—the implement four of Howard's "P P" ploughs in common or surface ploughing, and two of Cotgreave's trench ploughs in trench-ploughing. The quality of the work done by Howard's ploughs was far superior to that done by horses in the same field, and at less than one-fourth of the expense, while the trench-ploughing was considered by market gardeners equal to digging with the spade. Our readers will have seen from the advertising columns of the *Mark Lane Express* of the 15th inst., that the patentee of the Endless Railway afforded the public an opportunity, on Wednesday, Thursday, and Friday of last week, of examining the work and judging for themselves—an invitation which a large and respectable concourse of agriculturists and others interested have embraced. We attended on Tuesday and Friday, and give the result of our investigation below.

When we arrived at Steam Farm on Tuesday, the engine was working two of Cotgreave's trench-ploughs in trenching a small field belonging to Mr. John Middleton—Mr. Cotgreave himself superintending his ploughs. The work was being done about 12 inches deep, the engine travelling at a speed of from one-and-a-fourth to one-and-a-half that of the horse-teams in the adjoining field. The soil tried the implement severely; for although gravelly, it was yet so bound together and rocky hard in the bottom, as to set the subsoiling part at defiance in many places, all the rain which has fallen having had comparatively no influence in counteracting the binding effects of the summer's drought; but, stubborn as it was to the ploughs, and presenting a great resistance to the engine, the latter could have hauled another plough, as it was never working up to its full pressure of steam. Two ploughs, however, were all that were at command, and with these it was doing at the rate of about *five acres* per day. The quality of the work gave universal satisfaction, especially to the market gardeners of the neighbourhood, who offered to give 30s. per acre for such trenching, assuring the patentee and Mr. Middleton, who lets out engines, that a large area of land could be had at this rate among the market-garden grounds of the capital.

Steam-culture among market gardeners, it will thus be seen, promises to be a lucrative concern, the total investment of capital not exceeding £600, while the daily returns are about £6. Probably double this is nearer the truth. In detail the account would stand something as follows at this profit:—

	£	s.	d.
5 acres, at 30s...........	7	10	0
Expenses deducted	1	10	0
Profit per day........	6	0	0
„ week	36	0	0
„ month......	144	0	0
„ annum.	1,872	0	0

Being £72 over 300 per cent.! The actual cost, it will have been seen, is only about 6s. per acre.

In two other large fields on Steam Farm, a considerable extent of land was ploughed about nine inches deep. In both, the work was executed in a superior manner, the furrows being straight and well laid. Both fields, we may observe, were well adapted for traction-engine work, being comparatively level and of great length, and the result was acknowledged by all who examined it as a great triumph in favour of steam over the old system.

On Friday morning, when we got to Butt's Farm, steam was being got up, and by the time we had examined the work done by horses, &c., &c., the "steam horse" was snorting away triumphantly, with four of Howard's P P ploughs, ploughing nine inches deep, and at the rate of fully an acre per hour. It was no less interesting to witness the measured stroke and pace of the "steam horse," with his huge megatherium feet (the shoes of the wheels) falling regularly in their places, as if by some supernatural faculty inherent in themselves, successfully solving the most important proposition in the progress of modern science—*the economical substitute of steam for horse-power in the cultivation of the soil*—than it was to hear the farmers, ploughmen, and labourers present, addressing themselves practically to the undeniable facts before them. And, even effective as were their short ejaculations, they afforded but a very faint indication of the bewildered astonishment with which their minds beheld prospectively the agricultural revolution upon which they now saw themselves entering. The field was a more friable gravel than those of Steam Farm, Hatton, with an inclination not much greater, and in length nearly half a mile. A plough furrow was drawn across the field at each end, marking off the breadth of the headland the engine, with its ploughs and long chains, required to turn upon. As the ploughs reached these, they were regularly entered and taken out; and as the furrows were equal in depth and width, and well laid, the work went on with a clock-work mechanical sort of regularity, giving to the whole affair an established character, which they at once appreciated. All unhesitatingly acknowledged that each plough was doing more than an ordinary "four-horse furrow," and that such work could not be done in the district for less than 20s. per acre with horses, while with steam it did not cost more than 3s. 6d.! or at the utmost 4s.! Results such as these never fail to leave a lasting impression upon the minds of farmers; and our readers will readily believe us when we say the present occasion was no exception from the common rule.

The details of expenses may be thus stated:

Engine man, or stoker, 4s. per day......	£0	4	0
Steersman and four ploughmen, at 2s. 6d. per day	0	12	6
10 cwt. of coals, at 1s..........	0	10	0
Tear and wear of engine, &c...........	0	10	0
Total expenses per day..........	£1	16	6

So that this sum for ten acres would give something less than 3s. 8d. per acre. Or, if we take the total expense per day at £2, it would then be 4s. per acre, ploughed nine inches deep; consequently, the engine would yield a profit of £8 per day, £48 per week, or £2,496 per annum, if daily employed ploughing.

But such profits are incredible. No doubt the expense of horses near the capital and all our other large towns is great—often under-estimated by farmers—while railway communication is bringing every farm in the kingdom into close proximity with some large town or other; and no doubt, also, steam will induce farmers to put a higher value upon the food consumed by horses than they now do; still few of them will expect to realize £2,000 a year on their portable engines. There cannot be a doubt, however, but that we are on the verge of a great revolution in agriculture, and that a very large saving will be effected at no distant date by the adoption of steam in the cultivation of the soil. The blessing is unquestionably a national one, in which every member of society will participate. So far well, affording just grounds of congratulation to all; but one thing, nevertheless, is plainly in favour of the farmer—that the subject opens up to him a more fruitful field for his capital, skill, and industry than he now occupies, especially at the commencement, or before competition has produced its distributive results. And therefore we hope none will overlook this interest; for it is manifest that every portable engine in the kingdom may be made to redeem itself, and something more, in a season.

We ourselves are no admirers of six-inch-deep ploughing by steam; but as some appear to advocate this depth, and as we always allow farmers to be their own judges in this respect, the question may be raised—What can the steam-horse plough land at this depth for? And without going into the details of calculation, we answer 2s. 6d. per acre. At Chelmsford, the steam-horse ploughed land in the heavy-land field with five ploughs at the rate of 4s. per acre; and had equal justice been done him in the light-land field, he would there have done better work than was done after horses at 2s. 6d. per acre, for no team of horses can pull so equally as steam. This the steam-horse proved on Friday at Butts Farm, for there the four ploughs almost went alone. In proof of this, we may mention the fact—for we saw Mr. John Middleton, who held for some time the foremost plough, remove his hands from it, leaving it to go for several yards alone; and this is what he could not have done with a horse team. Our readers may rely on this; for there is no twisting of the back-bone and shaking of the tail with the steam-horse.

In making this allusion to Chelmsford, our readers must not suppose that we are indirectly insinuating that the stewards, judges, and consulting engineer of the Royal Agricultural Society did not know what the steam horse did in the trial field there, and what he was capable of doing, as that, in plain language, would be saying they were unqualified for the offices they held; for the £500 prize was not offered for work done, but for the implement which could economically do it. It will be high time to arrive at conclusions of this kind when we get the report of the judges and award of the Council of the Society. Meantime, however, we do say, and without fear of contradiction, that had justice been done to the steam-horse at Chelmsford, the large concourse of farmers there assembled would have seen what they had a just right to see—land ploughed by steam at 2s. 6d. per acre. We have suffered a good deal of opprobrium for our advocacy of direct traction by steam; but, being now in possession of the facts—facts which speak for themselves—we hurl defiance at our opponents, respectfully inviting them as men to take up the gauntlet if they now dare.

We cannot conclude this brief report without noticing the solemn duties now devolving upon the agricultural interest and implement makers, which the facts of the case at issue suggest: and not only them, but upon the public at large, for there is here a great political question involved as well as an agricultural, as horses consume some fifty million worth of the produce of the country annually. If, on the one hand, we can save this by the substitution of steam for horses, and if we can further double the produce of the country by superior culture, what effect will it have upon the food of the people? The political question, it will thus be seen, is a great one. On the other hand, the agricultural one—the ordering and manufacture of new implements, is no less; for upon it the value of the political one hinges. What, then, is the duty of every farmer and implement maker at present? So far as the endless railway is involved, the answer is plain; for every old portable engine, as well as new one, ought to be made a "steam-horse." Mr. John Middleton, of Steam Farm, and his brother, have here shown to their brother farmers a laudable example—one which we are glad to find large numbers are following; and it affords us much pleasure also to mention that several of our implement makers are now manufacturing steam-horses for their customers, well aware that portable engines on the old plan will very soon be a drug in the market. We have never exclusively advocated direct traction in ploughing: on the contrary, we advocate rope traction of every kind as circumstances demand—circumstances which farmers must always be left to judge for themselves. But as the steam-horse can work a stationary or travelling windlass as well as haul ploughs directly behind him, taking his coals and water to the field, the duty of the farmer and implement maker is plain; and, therefore, if either of them exclusively advocate any rope traction system in which they themselves may have a monopoly, to the prejudice of the steam-horse, they ought at once to be marked as a scapegoat for the wilderness.

On Friday the performance of the traction engine was witnessed by many eminent agriculturists and others, amongst whom we noticed Col. Sykes, the Chairman of the East India Company; the Russian Commissary-General, and three Russian Counts; Burnley Hume, Esq.; Col. Wood, &c., who expressed their unqualified opinion that the system of drawing by steam-traction will in a great measure supersede the use of cart horses.

PRUSSIAN REAPING MACHINES.

Herr Dierke, of Tempelhof, in Prussia, has transmitted to the Royal Agricultural College of Berlin the following replies to a series of questions propounded to him by that institution, in reference to his trials of Beermann's reaping machine:—"'What kind of grain crop has the machine cut, and in what state has it left the stubble?'—The stubble is left very level, and in a more even state than it would have been after hand-reaping. The height of the stubble is easily regulated at any level, from three to six inches above the ground. The machine cuts every kind of straw crop, especially when free from clover and grass, and is particularly adapted for wheat, summer-rye, and oats. Where the crop was laid, the delivery of cut corn was just as even as with hand-mowing and raking, provided the man employed for removing the swathes was at all handy at his work. 'How did the swathes fall: were they collected into good sheaves without much loss of time?'—The swathes were allowed to accumulate on the platform until they amounted to the quantity of sheaves, when they were removed by a man with a hand-rake, and then bound into sheaves by women, with as little trouble as if the straw had been collected by the hand and cut by the sickle. No stray ears were left in the path of the machine, excepting in the places where the binding had taken place; so that there was no necessity to employ the rake for collecting the gleanings of the field. 'What obstructions to the work, if any, were noticed?'—Rain was the only impediment. Mole-heaps, and stones protruding even four or five inches above the ground, presented no difficulty! nor did furrow-drains (when not too deep), especially when the machine could be driven right across them. When the corn was undergrown with wet grass of a fine character, the cutting part of the machine was frequently stopped by choking. This impediment, however, was soon removed, and the machine set again in motion. 'Has the machine proved itself to be a durable one?'—Its construction is very solid and compact, and some minor points, which were found by Herr Beermann to be defective, having been improved, the machine has required no further repairs. The cutting arrangement is made self-sharpening, by the passage of the knives backwards and forwards against a steel bar; the moderate application, however, of a file to the knives every couple of days was found to be useful. 'How many horses were required?'—The first half day only two horses were employed; these, however, being over-fatigued, three were subsequently used, and fresh ones put on every half-day. 'How many hands were required with the machine?'—Three men, including the driver, and from six to nine women, according to the weight of the crop. 'How many acres were reaped in a given time?'—As an experiment, it was found that rather more than one and two-thirds of an English statute-acre was reaped in an hour. In the course, however, of a whole day of thirteen working hours, the reaping proceeded at the rate of twenty acres a day; three men, seven women, and four horses being employed; and 346 fifteen-sheaved stacks of winter barley, reaped, bound, and set up."

LAND DRAINAGE.—GEOLOGICAL MAPS.

An esteemed correspondent has drawn attention in a recent number to some observations made by Lord Portman, at a late meeting of the Royal Agricultural Society, to the effect that there can be no uniform system of drainage, and that landowners might render essential service to the cause of agriculture by making experiments with a view to assist tenants, who could not afford to waste any of their capital, in ascertaining whether certain processes will prove remunerative.

Our correspondent considers this a most important announcement, in consequence of the drainage of land —if it requires draining—being the first step necessary for its improvement. The writer looks, moreover, to this announcement as deriving increased value from the influence it will have in counteracting the unsettled state of the public mind at the present moment on the subject of land drainage. In proof of this he refers to the diversity of opinions which exists among draining engineers, in the attempts to set up rival systems of drainage; to the large sums which have been improperly and unprofitably expended in draining; and to the still larger demands which are being made on the pockets of landowners and tenants, for capital and redeeming rent-charges. He therefore considers the agricultural interest under great obligations to the noble lord for his timely reply to the fallacious views of those who advocate a uniform system of draining for all sorts of soils.

He states the principal heads of inquiry to be two, which we consider to be five, as shown by the figures which we have placed in brackets—1. The depth at which drains should be placed in the soil; (2) the diameter of the pipes; (3) the distance between the drains. 2. (4) He lays it down as a principle that each experiment can only determine the drainage quality of the soil on which it is made; (5) he considers that the depth, distance, and size of drains should in every case be settled by experiment on the small scale, before the general work of draining a field, farm, or estate is commenced, on every different kind of soil. In these general remarks we entirely concur, with the exception above mentioned as to the number of heads of inquiry.

Under these different heads is enunciated a principle expressed more concisely by Lord Berners, that it is presumption for any man to lay down a uniform system of drainage for a whole county, or even a whole district, for he had found it impossible to lay down a uniform system for an entire farm, or even a whole field.

Some gentlemen, however, will reply to the remarks both of Lord Berners and our correspondent, that precisely what is wanted as the result of experiment, their extensive practice on all kinds of soils has communicated to them; and that they have now attained such an intuitive knowledge of the subject, that by merely walking over the land, and even in many cases without that ceremony, by merely looking at a geological map, they can settle all these points. In confirmation of these statements they appeal to the success of their draining operations, and the general satisfaction which they have given, not only to the landowner, but to the tenants, wherever they have been employed. Leaving our correspondent and the engineers to settle this point between themselves, we would merely remark that the value of experiments depends upon two very important points—the manner in which they are conducted, and the manner in which their results are described. It is not every man who knows how to interrogate Nature so as to obtain an answer which shall be of any value, or who knows how to translate that answer, when obtained, into such language as to interpret it correctly. Both of these qualifications require some training in the exact sciences. In agricultural experiments these two great principles are generally lost sight of. It is only when our agricultural youth shall have had that species of education which we have so often advocated for them, and when landowners who have received a university education shall have drunk more deeply of the waters of the same stream there provided for them, that their agricultural experiments will have much value.

When we speak of intelligible language, we mean that it is necessary such terms should be used as shall convey a definite and intelligible meaning. When the labourers at Babel began to use different terms for the same thing, one calling that brick which another called mortar, and a third calling for a hammer, when a fourth understood him to mean a trowel, then work speedily came to an end.

Just such confusion exists now in agricultural nomenclature. Everything in draining and cultivation is admitted to depend on the nature of the soil; but scarcely two men describe the same soil by the same name. We talk about sands, loams, and clays; but rarely with the same meaning attached to the same terms. In a district of sand, for instance, a light loam will be called clay; while in a district of clay it will be called sand.

The same confusion prevails in the nomenclature of mineral manures; and in agricultural experiments as to the quantities in which, and the parts of a given rotation in which, they should be applied. This might be illustrated by many examples if space permitted. One of the first requirements, then, in agricultural experimenting, is a definite nomenclature for soils, which shall be generally intelligible. It was thought, a few years back, that we had discovered a short cut, a royal road, to this. We were taught that we had only to take a geological map, and find that we were on the lias, the gault, &c., and we should know at once the nature of the soil. Two very important points were overlooked; firstly, that in those maps the superficial deposits of sand, loam, clay, and gravel, composed of materials transported from various distances, are supposed to be removed, though they constitute in the majority of cases both soil and subsoil, beyond those depths to which the operations of the deepest cultivators and the deepest drainers extend; and secondly, that the colour assigned to the gault, weald, clay, &c., represented not a stratum of uniform composition, but a great number of alternating beds, differing so widely in composition that the composition of the soil must vary considerably, even were it derived wholly from the unmixed materials of the rock immediately below. All the information, therefore, which a landowner derives from such a map is, that within certain areas he will find a certain group of fossils which he will not find elsewhere. This is knowledge valuable for the purpose of grouping and classifying the endless and bewildering succession of alternating beds of different composition, but valueless for the practical purposes of agriculture. This is what the late Professor Johnston meant when he said, nearly ten years ago, that the time had arrived when geology required maps of her own, which should show the depth, composition, and distribution of the superficial deposits. To this we presume our correspondent to allude when he says, under each of the heads which he had laid down, he assumes the soil to be of uniform geological quality, which in practice, he adds, is perhaps rather more the exception than the rule, drains being more frequently cut through drifted soils, each diversified in quality, and through diversified layers of stratification, than through uniform formations.

SIR HUMPHREY DAVY AND HIS SUCCESSORS.

The publication of Sir Humphrey Davy's "Agricultural Chemistry" opened up an entirely new view of the principles of fertility, and the requirements of vegetation, to those whose business it is to maintain fertility in the soil, and raise the greatest amount of vegetable produce from it. It informed the agricultural public that, instead of earth, air, fire, and water forming the elements of all things, fifty-two simple or elementary bodies had been discovered, which by their combination constituted the varieties of vegetable and animal substances. It described the structure and constitution of plants, explaining the functions of roots and leaves, and embodying the discoveries of Grew, Malpighi, Sennebier, Darwin, Decandolle, Mirbel, Knight, and other students of vegetable physiology. It taught the remarkable fact that plants consist of charcoal and gas—that all the wonderful varieties of organic tissues and substances are formed only of different combinations of carbon, hydrogen, oxygen, and azote, and that only a fractional part of a vegetable is built out of the material of the soil itself. It showed by what methods plants and soils and manures could be analyzed; and by exhibiting the identity of the elementary substances in organic manures and in living vegetation, elucidated the operation and efficacy of well-managed farm-yard dung and many commonly-used fertilizers.

This was a great step in an almost new path of inquiry; and considerable wonder, and conjecture, and expectation of still grander discoveries, were raised in the minds of agriculturists, when they learnt for the first time that both their heavy-strawed cereals and broad-leaved green crops were for the most part abstracted and embodied out of "the viewless air;" and that so magical were the chemical transformations of organic substances, compounded into infinite varieties of material from but a few ingredients, that "soft sugar could be made from linen rags."

But Davy did not attempt to weigh the amount of fertile constituents withdrawn from the soil by an entire crop or rotation of cropping, and lay down rules for exactly restoring them in manures. He knew little of what the soil can spontaneously obtain from the atmosphere; his views of the causes of fertility were at fault, and his determination of the relative values of vegetable substances as cattle food were erroneous. As for ammonia and nitric acid in the air, and the natural supply of nitrogen to plants from this source, he scarcely speculated upon them. Yet now, one of the principal topics of investigation and debate among agricultural chemists is—Whence and how do plants procure their nitrogen?

Davy knew, as well as Arthur Young had known, that "the volatile alkali" was a valuable manure. He says, "Nitre, or the nitrous acid combined with potassa, has been recommended for the purpose of increasing vegetation; and, as this substance consists of one proportion of azote, six of oxygen, and one of potassium, it is not unlikely that it may furnish azote (or nitrogen) to form albumen or gluten in the plants that contain them: but *the nitrous salts are too valuable* for other purposes, to be used as manures." He made a number of experiments in 1807 on the effects of different salts on barley and grass growing in a light sand, watering the plants twice a week with very diluted solutions of supercarbonate, sulphate, acetate, nitrate, and muriate of potash; sulphate of soda; and sulphate, nitrate, muriate, and carbonate of ammonia. "The plants watered with the solutions of the sulphates grew just in the same manner as similar plants watered with rain-water. Those acted on by the solution of nitre, acetate and supercarbonate of potassa, and muriate of ammonia, grew rather better. Those treated with the solution of carbonate of ammonia grew most luxuriantly of all. This last result is what might be expected; for carbonate of ammonia consists of carbon, hydrogen, azote, and oxygen. Soot doubtless owes part of its efficacy to the ammoniacal salt it contains. The liquor produced by the distillation of coal contains carbonate and acetate of ammonia, and is said to be a very good manure. In 1808, I found the growth of wheat in a field at Roehampton assisted by a very weak solution of acetate of ammonia." In another place he says, that " amongst excrementitious solid substances used as manure, one of the most powerful is the dung of birds that feed on animal food, particularly the dung of sea birds. The *guano*, which is used to a great extent in South America, and which is the manure that fertilizes the sterile plains of Peru, is a production of this kind. It exists abundantly, we are informed by M. Humboldt, on the small islands in the South Sea, at Chincha, Ilo, Iza, and Arica. Fifty vessels are laden with it annually at Chincha, each of which carries from 1,500 to 2,000 cubical feet. It is used as a manure only in very small quantities, and particularly for crops of maize. I made some experiments on specimens of guano sent from South America to the Board of Agriculture in 1805. It appeared as a fine brown powder; it blackened by heat, and gave off strong ammoniacal fumes: treated with nitric acid, it gave uric acid. In 1806, MM. Fourcray and Vauquelin published an elaborate analysis of guano. They state that it contains a fourth part of its weight of uric acid, partly saturated with ammonia, and partly with potassa; some phosphoric acid combined with the same bases, and likewise with lime; small quantities of sulphate and muriate of potassa, a little fatty matter, and some quartzose sand. It is easy to explain its fertilizing properties: from its composition it might be supposed to be a very powerful manure. The dung of sea birds has, I believe, never been used as a manure in this country." Fifty years have strangely altered our practice in this respect! Davy found also that our most powerful manures, such as nightsoil, urine, and pigeon's dung, contained large quantities of ammonia; but he does not seem to have considered the nitrogen as peculiarly and especially the valuable element. He only knew that ammonia certainly fed plants, and recommended farmers to abandon their practice of fermenting farmyard manure until an immense amount of gaseous matter was lost—" the principal elastic matter disengaged being carbonic acid with some ammonia; and both these, if retained in the soil, are capable of becoming a useful nourishment of plants." Dung ought to be defended, he observes, from the sun. A slight fermentation is advisable, in order to bring on a tendency in the woody fibre of the straw to decay and dissolve when it is buried in the soil; but there is great danger of carrying the process too far. " When a piece of paper, moistened with muriatic acid, held over the steams arising from a dunghill gives dense fumes, it is a certain test that the decomposition is going too far; for this indicates that volatile alkali is disengaged." The surface of the heap should be defended as much as possible from the oxygen of the atmosphere; and for this purpose he recommends a covering of " compact marl, or a tenacious clay." Still, he does not appear to have had a glimpse of the fact that strong soils absorb and retain ammonia and other gaseous riches from the air. Though he says, " the earths have a certain degree of chemical attraction for many of the principles of vegetable and animal substances, which, with water, constitute the true nourishment of plants. Thus, the extract from decomposing vegetable matter, when boiled with pipeclay or chalk, forms a combination by which the vegetable matter is rendered more difficult of decomposition and solution. Pure silica and siliceous sands have but little action of this kind; and the soils which contain the most alumina and carbonate of lime are those which act with the greatest chemical energy in preserving manures. Such soils merit the appellation which is commonly given to them, of rich soils; for the vegetable nourishment is long preserved in them, unless taken up by the organs of plants. Siliceous sands, on the contrary, deserve the term hungry which is commonly applied to them; for the vegetable and animal matters they contain not being attracted by the earthy constituent parts of the soil, are more liable to be decomposed by the action of the atmosphere, or carried off from them by water."

Oh, Sir Humphrey! why could you not have gone just a little further, and forestalled Mr. Thompson and Mr. Way, and their discovery of " the absorptive property of soils"? Instead of this, Davy writes respecting fallowing: " It has been supposed by some writers that certain principles necessary to fertility are derived from the atmosphere, which are exhausted by a succession of crops, and that these are again supplied during the repose of the land, and the exposure of the pulverized soil to the influence of the air; but this is not a correct statement. Oxygen is absorbed by the vegetable film, and perhaps, in certain cases, azote; but the earths, the great elements of soils, cannot be combined with new elements from the air: none of them unite to azote; and such of them as are capable of attracting carbonic acid are always saturated with it in those soils on which the practice of fallowing is adopted. The vague ancient opinion of the use of nitre and of nitrous salts in vegetation seems to have been one of the principal speculative reasons for the defence of summer-fallows. Nitrous salts are produced during the exposure of soils containing vegetable and animal remains, and in greatest abundance in hot weather; but it is probably by the combination of azote from these remains with oxygen in the atmosphere that the acid is formed, and at the expense of an element which would otherwise have formed ammonia, the compounds of which are much more efficacious than the nitrous compounds in assisting vegetation."

MANAGEMENT OF DAIRY CATTLE.—1854 TO 1856.

BY T. HORSFALL.

[The readers of the *Farmer's Magazine* will remember that no little controversy followed the first introduction of Mr. Horsfall's system of dairy management, and his recorded successes in the production of butter. It was one of those questions, so far but little mooted, to which we at once opened our columns. Without in any way re-considering the manner in which the case was then put, there is no denying but that the impression created at the time was not very favourable. The conductors, however, of the Royal Agricultural Society's *Journal* have followed up these first statements from Mr. Horsfall with some additional details, more especially referring to the management of his cattle. We give the article entire. The former papers duly appeared amongst the weekly proceedings of the Society; and we believe we are only doing their author common justice in allowing him thus further to explain what he has accomplished. Whatever may be our own impressions, our chief aim is to give either side a fair hearing, and we so trust that both Mr. Horsfall and his opponents will duly appreciate the motives which have prompted us to quote thus largely from another source.]

On entering upon a description of my treatment of cows for dairy purposes, it seems pertinent that I should give some explanation of the motives and considerations which influence my conduct in this branch of my farm operations.

I have found it stated, on authority deserving attention, that store cattle of a fair size, and without other occupation, maintain their weight and condition for a length of time, when supplied daily with 120 lbs. of Swedish turnips and a small portion of straw. The experience of the district of Craven, in Yorkshire, where meadow hay is the staple food during winter, shows that such cattle maintain their condition on 1½ stone of meadow hay each per day. These respective quantities of turnips and of hay correspond very closely in their nutritive properties; they contain a very similar amount of albuminous matter, starch, sugar, &c., and also of phosphoric acid. Of oil—an important element, especially for the purpose of which I am treating—the stated supply of meadow hay contains more than that of turnips. If we supply cows in milk of average size with the kind and quantity of food above mentioned, they will lose perceptibly in condition. This is easily explained when we find their milk rich in substances which serve for their support when in store condition, and which are shown to be diverted in the secretion of milk.

In the neighbourhood of towns where the dairy produce is disposed of in new milk, and where the aim of dairymen is to produce the greatest quantity, too frequently with but little regard to quality, it is their common practice to purchase in-calving cows; they pay great attention to the condition of the cow; they will tell you, by the high comparative price they pay for animals well stored with flesh and fat, that condition is as valuable for them as it is for the butcher; they look upon these stores as materials which serve their purpose; they supply food more adapted to induce quantity than quality, and pay but little regard to the maintenance of the condition of the animal. With such treatment the cow loses in condition during the process of milking, and when no longer profitable, is sold to purchasers in farming districts where food is cheaper, to be fattened or otherwise replenished for the use of the dairy keeper. We thus find a disposition in the cow to apply the aliment of her food to her milk rather than to lay on flesh or fat; for not only are the elements of her food diverted to this purpose, but to all appearance her accumulated stores of flesh and fat are drawn upon, and are converted into components of milk, cheese, or butter.

As I am differently circumstanced, a considerable portion of my dairy produce being intended for butter, for which poor milk is not adapted, and as I fatten not only my own cows, but purchase others to fatten in addition, I have endeavoured to devise food for my milch cows, adapted to their maintenance and improvement, and with this view I have paid attention to the composition of milk. From several analyses I have selected one by Haidlen, which I find in publications of repute. Taking a full yield of milk, 4 gallons per day, which will weigh upwards of 40 lbs., this analysis assigns to it of dry material 5.10, of which the proportion, with sufficient accuracy for my purpose, consists of—

	lbs.
Pure casein	2.00
Butter	1.25
Sugar	1.75
Phosphate of lime	.09
Chloride of potassium And other mineral ingredients	.11
	5.20

It appeared an object of importance, and one which called for my particular attention, to afford an ample supply of the elements of food suited to the maintenance and likewise to the produce of the animal, and that, if I omitted to effect this, the result would be imperfect and unsatisfactory. By the use of ordinary farm produce only, I could not hope to accomplish my purpose. Turnips are objectionable on account of their flavour; and I seek to avoid them as food for dairy purposes. I use cabbages, kohl rabi, and mangold wurzel, yet only in moderate quantities. Of meadow hay it would require, beyond the amount necessary for the maintenance of the cow, an addition of fully 20 lbs. for the supply of casein in a full yield of milk (16 quarts); 40 lbs. for the supply of oil for the butter; whilst 9 lbs. seem adequate for that of the phosphoric acid. You cannot, then, induce a cow to consume the quantity of hay requisite for her maintenance, and for a full yield of milk of the quality instanced. Though it is a subject of controversy whether butter is wholly derived from vegetable oil, yet the peculiar adaptation of this oil to the purpose will, I think, be admitted. I had, therefore, to seek assistance from what are usually termed artificial feeding substances, and to select such as are rich in albumen, oil, and phosphoric acid; and I was bound also to pay regard to their comparative cost, with a view to profit, which, when farming is followed as a business, is a necessary, and in any circumstances an agreeable accompaniment.

I think it will be found that substances peculiarly rich in nitrogenous or other elements have a higher value for special than for general purposes; and that the employment of materials characterized by peculiar properties for the attainment of special objects has not yet gained the attention to which it is entitled.

I have omitted all reference to the heat-supplying elements—starch, sugar, &c. As the materials commonly used as food for cattle contain sufficient of these to effect this object, under exposure to some degree of cold, I have a right to calculate on a less consumption of them as fuel, and consequently a greater surplus for deposit as sugar, and probably also as fat, in consequence of my stalls being kept during winter at a temperature of nearly 60 degrees.

I now proceed to describe the means I am using to carry out the purposes which I have sought to explain. My food for milch cows, after having undergone various modifications, has for two seasons consisted of rape-cake 5 lbs., and bran 2 lbs. for each cow, mixed with a sufficient quantity of bean-straw, oat-straw, and shells of oats, in equal proportions, to supply them three times a day with as much as they will eat. The whole of the materials are moistened and blended together, and after being well steamed, are given to the animals in a warm state. The attendant is allowed 1 lb. to 1½ lb. per cow, according to circumstances, of bean-meal, which he is charged to give to each cow in proportion to the yield of milk, those in full milk getting 2 lbs. each per day, others but little: it is dry and mixed with the steamed food on its being dealt out separately; when this is eaten up, green food is given, consisting of cabbages, from October to December, kohl rabi till February, and mangold till grass time. With a view to nicety of flavour, I limit the supply of green food to 30 to 35 lbs. per day for each. After each feed 4 lbs. of meadow hay, or 12 lbs. per day, is given to each cow; they are allowed water twice per day to the extent they will drink.

As several of these materials are not commonly used as food, I may be allowed some observations on their properties. Bean-straw uncooked is dry and unpalatable; by the process of steaming, it becomes soft and pulpy, emits an agreeable odour, and imparts flavour and relish to the mess. For my information and guidance I obtained an analysis of bean-straw of my own growth, on strong and high-conditioned land: it was cut on the short side of ripeness, but yielding a plump bean. The analysis by Professor Way shows a per-centage of—

Moisture	14.47
Albuminous matter	16.38
Oil or fatty matter	2.23
Woody fibre	25.84
Starch, gum, &c.	31.63
Mineral matters	9.45
Total	100.00

In albuminous matter, which is especially valuable for milch cows, it has nearly double the proportion contained in meadow hay. Bran also undergoes a great improvement in its flavour by steaming, and it is probably improved in its convertibility as food; it contains about 14 per cent. of albumen, and is peculiarly rich in phosphoric acid, nearly 3 per cent. of its whole substance being of this material. The properties of rape-cake are well known; the published analyses give it a large proportion (nearly 30 per cent.) of albumen; it is rich in phosphates and also in oil. This is of the unctuous class of vegetable oils, and it is to this property that I call particular attention. Chemistry will assign to this material, which has hitherto been comparatively neglected for feeding, a first place for the purpose of which I am treating. If objection should occur on account of its flavour, I have no difficulty in stating that by the preparation I have described I have quite overcome this. I can easily persuade my cattle (of which 60 to 80 pass through my stalls in a year), without exception, to eat the requisite quantity. Nor is the flavour of the cake in the least perceptible in the milk or butter.

During May, my cows are turned out on a rich pasture near the homestead; towards evening they are again housed for the night, when they are supplied with a mess of the steamed mixture and a little hay each morning and evening. During June, when the grasses are better grown, mown grass is given to them instead of hay, and they are also allowed two feeds of steamed mixture. This treatment is continued till October, when they are again wholly housed.

The results which I now proceed to relate are derived from observations made with the view of enabling me to understand and regulate my own proceedings.

GAIN OR LOSS OF CONDITION ASCERTAINED BY WEIGHING CATTLE PERIODICALLY.

For some years back I have regularly weighed my feeding stock, a practice from which I am enabled to ascertain their doings with greater accuracy than I could previously. In January, 1854, I commenced weighing my milch cows; it has been shown by what I have premised that no accurate estimate can be formed of the effect of food on the production of milk, without ascertaining its effect on the condition of the cows. I have continued the practice once a month almost without omission up to this date. The weighings take place early in the morning, and before the cows are supplied with food; the weights are registered, and the length of time (15 months) during which I have observed this practice enables me to speak with confidence of the results.

The cows in full milk yielding 12 to 16 quarts each per day vary but little—some losing, others gaining slightly; the balance in the month's weighing of this class being rather to gain. It is common for a cow to continue a yield from six to eight months before she gives below 12 quarts per day, at which time she has usually, if not invariably, gained weight.

The cows giving less than 12 quarts, and down to 5 quarts per day, are found when free from ailment to gain without exception. This gain, with an average yield of nearly 8 quarts per day, is at the rate of 7 lbs. to 8 lbs. per week each.

My cows in calf I weigh only in the incipient stages, but they gain perceptibly in condition, and consequently in value: they are milked till within four or five weeks previous to calving. I give the weights of three of these, and also of one heifer, which calved in March, 1855:—

No.		July, 1854.			April, 1855.			Gain.
		cwt.	qr.	lbs.	cwt.	qr.	lbs	lbs.
1	Bought and weighed	10	1	20	11	3	0	148
2	,, ,, ...	8	2	10	10	2	0	214
3	,, ,, ...	8	2	0	10	0	0	168
4	Heifer, which calved also in March, 1855, weighed	7	0	0	9	3	0	308

These observations extend over lengthened periods on the same animals, of from 30 to upwards of 50 weeks; a cow, free from calf and intended for fattening, continues to give milk from ten months to a year after calving, and is then in a forward state of fatness, requiring but a few weeks to finish her for sale to the butchers.

It will thus appear that my endeavours to provide food adapted to the maintenance and improvement of my milch cows have been attended with success.

On examining the composition of the ordinary food which I have described, straw, roots, and hay, it appears to contain the nutritive properties which are found adequate to the *maintenance* of the animal, whereas the yield of milk has to be provided for by a supply of extra food; the rape-cake, bran, and bean-meal which I give will supply the albumen for the casein; it is somewhat deficient in oil for the butter, whilst it will supply in excess the phosphate of lime for a full yield of milk. If I take the class of cows giving less than 12 quarts per day, and taking also into account a gain of flesh, 7 to 9 lbs. per week, though I reduce the quantity of extra food by giving less of the bean-meal, yet the supply will be more in proportion than with a full yield; the surplus of nitrogen and phosphoric acid, or phosphate of lime, will go to enrich the manure.

I cannot here omit to remark on the satisfaction I derive from the effects of this treatment on the fertility of the land in my occupation. My rich pastures are not tending to impoverishment, but to increased fertility; their improvement in condition is apparent. A cow in full milk, giving 16 quarts per day, of the quality analysed by Haidlen, requires, beyond the food necessary for her maintenance, 6 to 8 lbs. per day of substances containing 30 or 25 per cent. of protein. A cow giving on the average 8 quarts per day, with which she gains 7 to 9 lbs. per week, requires 4 to 5 lbs per day of substances rich in protein beyond the food which is necessary for her maintenance. Experience of fattening gives 2 lbs. per day, or 14 lbs. per week, as what can be attained on an average and for a length of time. If we consider ½ lb. per day as fat, which is not more than probable, there will be 1½ lb. for flesh, which, reckoned as dry material, will be about ⅓ lb.; which is assimilated in increase of fibrine and represents only 1⅓ to 2 lbs. of substances rich in protein beyond what is required for her maintenance.

If we examine the effects on the fertility of the land, my milch cows, when on rich pasture, and averaging a yield of 9 quarts per day, and reckoning one cow to each acre, will carry off in twenty weeks 25 lbs. of nitrogen, equal to 30 of ammonia. The same quantity of milk will carry off 7 lbs. of phosphate of lime in twenty weeks from each acre.

A fattening animal gaining flesh at the rate I have described will carry off about one-third of the nitrogen (equal to about 10 lbs of ammonia) abstracted by the milch cow, whilst if full grown it will restore the whole of the phosphate.

It is worthy of remark that experience states that rich pastures used for fattening, fully maintain their fertility through a long series of years; whilst those used for dairy cows require periodical dressings to preserve their fertility.

If these computations be at all accurate, they tend to show that too little attention has been given to the supply of substances rich in nitrogenous compounds in the food for our milch cows, whilst we have laid too much stress on this property in food for fattening cattle. They tend also to the inference that in the effects on the fertility of our pastures used for dairy purposes, we derive advantage not only from the phosphate of lime, but also from the gelatine of bones used as manure.

On comparing the results from my milch cows fed in summer on rich pasture, and treated at the same time with the extra food I have described, with the results when on winter food, and whilst wholly housed, taking into account both the yield of milk and the gain of weight, I find those from stall-feeding fully equal to those from depasture. The cows which I buy as strippers, for fattening, giving little milk, from neighbouring farmers who use ordinary food, such as turnips with straw or hay, when they come under my treatment, increase their yield of milk, until after a week or two they give two quarts per day more than when they came, and that too of a much richer quality.

RICHNESS OF MILK AND CREAM.

I sometimes observe in the weekly publications which come under my notice accounts of cows giving large quantities of butter; these are usually, however, extraordinary instances, and not accompanied with other statistical information requisite to their being taken as a guide; and it seldom happens that any allusion is made to the effects of the food on the condition of the animals, without which no accurate estimate can be arrived at. On looking over several treatises to which I have access, I find the following statistics on dairy produce:—Mr. Morton, in his "Cyclopædia of Agriculture," p. 621, gives the results of the practice of a Mr. Young, an extensive dairy-keeper in Scotland. The yield of milk per cow is stated at 680 gallons per year; he obtains from 16 quarts of milk, 20 oz. of butter, or for the year, 227 lbs. per cow; from 1 gallon of cream 3 lbs. of butter, or 12 oz. per quart. Mr. Young is described as a high feeder; linseed is his chief auxiliary food for milch cows. Professor Johnston ("Elements of Agricultural Chemistry") gives the proportion of butter from milk at 1½ oz. per quart, or from 16 quarts 24 oz.; being the produce of four cows of different breeds—Alderney, Devon, and Ayrshire—on pasture, and in the height of the summer season. On other four cows of the Ayrshire breed he gives the proportion of butter from 16 quarts as 16 oz., being 1 oz per quart. These cows were likewise on pasture. The same author states the yield of butter as one-fourth of the weight of cream, or about 10 oz. per quart. Mr. Rawlinson ("Journal of the Royal Agricultural Society," vol. xiii., p. 38) gives the produce of 20,110 quarts of milk churned by hand as 1,109 lbs. of butter, being at the rate of fully 14 oz. per 16 quarts of milk; and from 23,156 quarts of milk, 1,525 lbs. of butter, being from 16 quarts nearly 16¾ oz. of butter. The same author states that the yield of butter derived from five churnings of 15 quarts of cream each is somewhat less than 8 oz. per quart of cream. Dr. Muspratt, in his work on the "Chemistry of Arts and Manufactures," which is in the course of publication, gives the yield of butter from a cow per year in Holstein and Lunenburg at 100 lbs., in England at 160 to 180 lbs. The average of butter from a cow in England is stated to be 8 oz. or 9 oz. per day, which, on a yield of 8 to 9 quarts, is 1 oz. per quart, or for 16 quarts 16 oz. The quantity of butter derived from cream is stated as one-fourth, which is equal to about 9 oz. per quart. The richest cream of which I find any record is that brought to the Royal Society's meeting during the month of July, for the churns which compete for the prize. On referring to the proceedings of several meetings, I find that 14 oz. per quart of cream is accounted a good yield.

I have frequently tested the yield of butter from a given quantity of my milk. My dairy produce is partly disposed of in new milk, partly in butter and old milk, so that it became a matter of business to ascertain by which mode it gave the best return. I may here remark that my dairy practice has been throughout on high feeding, though it has undergone several modifications. The mode of ascertaining the average yield of butter from milk has been to measure the milk on the churning day after the cream has been skimmed off, then to measure the cream, and having, by adding together the two measurements, ascertained the whole quantity of milk (including the cream) to compare it with that of the butter obtained. This I consider a more accurate method than measuring the new milk, as there is a considerable escape of gas, and consequent subsidence, whilst it is cooling. The results have varied from 24 to 27¼ oz. from 16 quarts of milk. I therefore assume in my calculation 16 quarts of milk as yielding a roll (25 ounces) of butter.

As I have at times a considerable number of cows bought as strippers, and fattened as they are milked, which remain sometimes in my stalls eight or nine months, and yield towards the close but five quarts per day, I am not enabled to state with accuracy and from ascertained data the average yield per year of my cows kept for dairy purposes solely. However, from what occurs at grass-time, when the yield is not increased, and also from the effects of my treatment on cows which I buy, giving a small quantity, I am fully persuaded that my treatment induces a good yield of milk.

As the yield of butter from a given quantity of cream is not of such particular consequence, I have not given equal attention to ascertain their relative proportions. I have a recollection of having tested this on a former occasion, when I found 14 to 16 oz. per quart, but cannot call to mind under what treatment this took place.

On questioning my dairywoman, in December, 1854, as to the proportion of cream and butter, she reported nearly one roll of 25 oz. of butter to one quart of cream. I looked upon this as a mistake. On its accuracy being persisted in, the next churning was carefully observed, with a like proportion. My dairy cows averaged then a low range of milk as to quantity—about eight quarts each per day. Six of them, in a forward state of fatness, were intended to be dried for finishing off in January; but, owing to the scarcity and consequent dearness of calving cows, I kept them on in milk till I could purchase cows to replace them, and it was not till February that I had an opportunity of doing so. I then bought four cows within a few days of calving: they were but in inferior condition, and yielded largely of milk. Towards the close of February and March, four of my own dairy sows, in full condition, likewise calved. During March, three of the six which had continued from December, and were milked nearly up to the day of sale, were selected by the butcher as fit for his purpose. Each churning throughout was carefully observed, with a similar result, varying but little from 25 oz. of butter per quart of cream; on Monday, April 30, 16 quarts of cream having yielded 16 rolls (of 25 oz. each) of butter. Though I use artificial means of raising the temperature of my dairy, by the application of hot water during cold weather, yet, my service-pipes being frozen in February, I was unable to keep up the temperature, and it fell to 45 deg. Still my cream, though slightly affected, was peculiarly rich, yielding 22 oz. of butter per quart. Throughout April the produce of milk from my 15 dairy cows averaged full 160 quarts per day.

My cows are bought in the neighbouring markets with a view to their usefulness and profitableness. The breeds of this district have a considerable admixture of the shorthorn, which is not noted for the richness of its milk. It will be remarked that during the time these observations have been continued on the proportion of butter from cream, more than one-half of my cows have been changed.

Having satisfied myself that the peculiar richness of my cream was due mainly to the treatment of my cows, which I have sought to describe, it occurred to me that I ought not to keep it to myself; inasmuch as these results of my dairy practice not only afforded matter of interest to the farmer, but were fit subjects for the investigation of the physiologist and the chemist. Though my pretensions to acquirements in their instructions are but slender, they are such as to enable me to acknowledge benefit in seeking to regulate my proceedings by their rules.

In taking off the cream I use an ordinary shallow skimmer of tin perforated with holes, through which any milk gathered in skimming escapes. It requires care to clear the cream; and even with this some streakiness is observable on the surface of the skimmed milk. The milk bowls are of glazed brown earthenware, common in this district; they stand on a base of 6 to 8 inches, and expand at the surface to nearly twice that width. Four to five quarts are contained in each bowl, the depth being four to five inches at the centre. The churn I use is a small wooden one, worked by hand, on what I believe to be the American principle. I obtained it from Messrs. Dray and Co. I have forwarded to Professor Way a small sample of butter for analysis; 15 quarts of cream were taken out of the cream jar, and churned at three times in equal portions—

The first five quarts of cream gave..	127	oz. of butter.
The second five „ „ ..	125	„
The third five „ „ ..	120½	„
	372½	„

= to 24¾ oz. per quart.

At a subsequent churning of 14 quarts of cream—

The first seven gave 7 rolls, or..........	175	oz. of butter.
The second seven gave 7 rolls 2 oz., or...	177	„
	352	

= to 25 1-7 oz. per quart.

On testing the comparative yield of butter and of buttermilk, I find 70 per cent. of butter to 30 per cent. of buttermilk, thus reversing the proportions given in the publications to which I have referred. An analysis of my butter by Professor Way gives—

Pure fat or oil..............................	82 70
Casein or curd	2.45
Water with a little salt	14.85
Total..............................	100.00

The only analyses of this material which I find in the publications in my hand are two by Professor Way, 'Journal,' vol xi. p. 735, "On butter by the common and by the Devonshire method;" the result in 100 parts being—

	Raw.	Scalded.
Pure butter.................	79.72	79.12
Casein, &c.	3.38	3.37
Water	16.90	17.51
Total.............	100.00	100.00

The foregoing observation of dairy results was continued up to grass time in 1855. In April and May the use of artificial means was discontinued without diminution in the yield of butter or richness of cream, the natural temperature being sufficient to maintain that of my dairy at 54 deg. to 56 deg.

I now proceed to describe the appearance since that time.

In the summer season, whilst my cows were grazing in the open pastures during the day and housed during the night, being supplied with a limited quantity of the steamed food each morning and evening, a marked change occurred in the quality of the milk and cream; the quantity of the latter somewhat increased, but instead of 25 oz. of butter per quart of cream, my summer cream yielded only 16 oz. per quart.

I would not be understood to attribute this variation in quality to the change of food only; it is commonly observed by dairy-keepers that milk during the warm months of summer is less rich in butter, owing probably to the greater restlessness of the cows, from being teased by flies, &c. I am by no means sure that, if turning out during the warm months be at all advisable, it would not be preferable that this should take place during the night instead of during the day time. Towards the close of September, when the temperature had become much cooler and the cows were supplied with a much larger quantity of the steamed food, results appeared very similar to those which I had observed and described from December to May, 1855. During the month of November the quality was tested with the following result.

From 252 qts. of old milk were taken 21 qts. of cream, of which 20 were churned, and produced 468 oz. of butter, which shows :—

27.50 oz. of butter for 16 qts. of new milk.
23.40 oz. ,, each qt. of cream.

During May, 1856, my cows being on open pasture during the day were supplied with two full feeds of the steamed mixture, together with a supply of green rape-plant each morning and evening.

The result was that from 324 qts. of old milk 23 qts. of cream were skimmed, of which 22 were churned and produced 515 oz. of butter, which shows :—

24 oz. of butter from 16 qts. of new milk.
22.41 oz. ,, each qt. of cream.

My food during the winter season 1855-56 has slightly varied from that of 1854-55. In October a respectable maltster in this village, who keeps dairy cows, asked me to purchase malt coombs, of which he had a surplus. Having learnt from him on inquiry that from the use of them he obtained a larger yield of milk, without detriment to the condition of his cows, I was led to think that they contained a considerable per centage of albuminous matter. I took some on trial and forwarded a sample for analysis, which I supply, together with one of bran :—

MALT COOMBS.		BRAN.	
Moisture	3.21	Moisture	12.85
Oil	2.96	Oil	5.56
Albuminous matter	23.87	Albuminous matter	13.80
Starch, sugar, &c.	45.94	Ash*	6.11
Woody fibre	18.80	Other constituents	61.68
Mineral matter	5.22		
J. T. WAY.	100.00	ANDERSON.	100.00

* The ash contains 50 per cent. phosphoric acid.

I have used malt coombs, together with bran, half and half, during the present season. Having a larger stock than the year before, with about an equal quantity of hay and less of roots, I reduced the allowance of the former from 12 lbs. to 9 lbs., and that of mangel from 36 lbs. to 28 lbs. per day. I gave also 1 lb. of rapecake additional to each, 6 lbs. in lieu of 5 lbs. On this fare, and with such changes of cows as were called for, my yield of milk, of which a register is kept, ranged during the months of October, November, December, and January, at 160 to 164 quarts per day from 18 cows, being fully 9 quarts per day from each cow. Their improvement in condition will appear from the following table :—

Stall A. 1855.	Weight. cwt.	qr.	lbs.	1856.	Weight. cwt.	qr.	lbs.				lbs.	Per week lbs.
1. Oct. 9,	10	3	0	Jan. 29	11	3	0	Gain in	16	weeks	112	7
2. Oct. 9,	9	3	0	,,	9	3	0	,,	,,	,,	,,	,,
3. Oct. 9,	10	1	0	,,	11	0	0C	,,	,,	,,	84	5¼
4. Dec. 3,	10	0	0	,,	10	0	12	,,	8	,,	12	1½
5. Jan. 1,	10	0	0	,,	10	0	16C	,,	4	,,	16	4
6. Oct. 9,	9	0	0	,,	9	3	0	,,	16	,,	84	5¼
7. Oct. 9,	9	2	0	,,	9	3	20C	,,	16	,,	48	3

Stall B. 1855.	Weight. cwt.	qr.	lbs.	1856.	Weight. cwt.	qr.	lbs.				lbs.	Per week lbs.
1. Oct. 9,	11	1	0	Jan. 29	12	2	20	Gain in	16	weeks	160	8¾
2. ,,	11	1	0	,,	12	1	0	,,	,,	,,	112	7
3. ,,		..		,,	9	2	0	Newly calved.				
4. ,,	10	2	0	,,	12	2	0	Gain in	16	weeks	224	14
5. ,,	9	2	0	,,	10	0	8C	,,	,,	,,	64	4
6. ,,	11	0	0	,,	11	3	0	,,	,,	,,	84	5¼
7. Jan. 1,	9	2	0	,,	9	3	0	,,	4	,,	28	7
8. Oct. 9,	10	1	0	,,	11	1	0	,,	16	,,	112	7
9. Dec. 3,	11	1	0	,,	11	2	0C	,,	8	,,	28	3½
10. Oct. 9,	8	3	16	,,	9	1	16C	,,	16	,,	56	3½
11. ,,	9	3	0	,,	10	3	16	,,	16	,,	128	8

The cows, No. 2 and No. 7, stall A, calved in September. Soon after calving each yielded 20 quarts per day. On their first weighing, No. 2 weighed 9 cwt. 3 qrs.; No. 7, 9 cwt. 2 qrs. At the next, No. 2 had lost 28 lbs.; No. 7 had exactly maintained its weight. On this being discovered, the attendant was ordered to give No. 2 a little bean-meal in addition. At the expiration of 16 weeks No. 2 gave 16 quarts, No 7 12 quarts per day; their respective weights were—No. 2, 9 cwt. 3 qrs., having regained her weight, and No. 7, 9 cwt. 3 qrs. 20 lbs., having gained 48 lbs. Eight weeks later, with a reduced yield of milk, No. 2 weighed 10 cwt., having gained 28 lbs.; No. 7, 104 lbs., from the time of calving. No. 2 was free from calf; No. 7 in the incipient stage of calf; five others, also marked C, were in like state of incipient calf.

No. 4, stall B, which shows the greatest gain, was far advanced in calf, giving but little milk.

Nos. 1, 2, 7, 8, and 11, in stall B, which had gained respectively 8¾ lbs., 7 lbs., 7 lbs., 7 lbs., 8 lbs. per week, were in course of fattening. I do not keep a separate account of the yield of each cow: the average yield of this class during the 16 weeks will have been about 8 quarts per day each; those gaining at a less rate per week—Nos. 4, 5, &c. in stall A, and 9, 10, &c. in stall B—may be reckoned as giving a greater yield of milk.

In February and March, 1856, four cows which had calved at the like period of 1855, were sold as fat for £19 15s. each; at the same time, in 1856, I bought cows of equal quality and capability, dry, or giving a small quantity of milk under ordinary treatment, at £11 to £13 each, to fatten which will require six months. My cows thus fatted have the repute of killing well, and I am enabled to obtain the top price of the day; of the four sold in February and March, the purchasers have supplied me with the weight of loose fat.

Mr. Lupton,	Burley,	150	lbs.	loose fat,	live weight	14 cwt.		
Mr. Wilson,	Bradford,	152	,,	,,	,,	12	,,	2 qr.
,,	,,	132	,,	,,	,,	11	,,	1 ,,
,,	,,	90	,,	,,	,,	11	,,	3 ,,

It will be observed that No. 2, stall A, with an average yield of milk of 18 quarts per day, maintained her weight during 16 weeks; whilst No. 7, with an average yield of 16 quarts per day, gained 48 lbs. in the like time. Taking Haidlen's analysis as a basis for calculation, the cow No. 2 will have given off in casein 2¼ lbs. per day, equal to 15¾ lbs. per week, which represents the albumen of 9 lbs. per day, or 63 lbs. per week, of feeding substances containing 25 per cent. of this matter. The bulky food I have described, straw, roots, and hay, with rape-cake 6 lbs., malt combs 1 lb., bran 1 lb., and bean-meal 2 lbs.—have sufficed for this, and have also maintained the weight or condition of the cow.

The six cows, giving 8 quarts of milk per day during 16 weeks, will have given off per day 1 lb. of dry casein, equal to 7 lbs. per week, and may have assimilated in dry fibrine 1 lb., equal to 4½ lbs. of flesh; these together represent 5 lbs. per day, or 35 lbs. per week, of food containing 25 per cent. of albumen. As this class of animals have been supplied with 7 to 8 lbs. per day of such substances, it will be obvious that their excrement has been richer in nitrogen than that of No. 2.

If we allow a gain of weight of 16 lbs. per week, which is more than can be attained on the average by fattening, and reckon 12 of this as flesh or lean beef, equal to 2.70 per week, or .39 per day, of dry fibrine, it will represent 1·56 lbs. per day, or 10.92 lbs. per week for what is assimilated in the fattening process beyond what is adequate for maintenance.

I adduce these calculations in corroboration of my proposition that food rich in albumen has a more especial value for the production of milk than for fattening or beef-making.

There is doubtless some standard of food adapted to the constitution and purposes of animals, combining with bulk a due proportion of elements of respiration, such as sugar, starch, &c., together with those of nutrition, viz., nitrogenous compounds, phosphates and other minerals; nor can we omit oil or fat-forming substances; for however we may be disposed to leave to philosophy the discussion as to whether sugar, starch, &c. are convertible into fat, yet I think I shall not offend the teacher of Agricultural Chemistry by stating that the more closely the elements of food resemble those in the animal and its product, the more efficacious will such food be for the particular purpose for which it is used.

Sugar, starch, &c. vary very considerably in form and proportion from vegetable oils, which closely resemble animal fats.

When we consider that plants have a two-fold function to perform, viz., to serve as food for animals and also for the reproduction of the like plants, and that after having undergone the process of digestion they retain only one-half or one-third af their value as manure, the importance of affording a *due but not excessive* supply of each element of food essential to the wants and purposes of the animal will be evident. If we fall short, the result will be imperfect; if we supply in excess, it will entail waste and loss.

Linseed and rape cake resemble each other very closely in chemical composition; the latter is chiefly used for manure, and its price ranges usually about half that of linseed cake. In substances poorer in nitrogen, and with more of starch, gum, oil, &c., the disparity in value as food and as manure will be proportionately greater.

During the present season Mr. Mendelssohn, of Berlin, and Mr. Gausange, who is tenant of a large royal domain near Frankfort on the Oder, on which he keeps about 150 dairy cows, have been my visitors. These gentlemen have collected statistics in dairy countries through which they have travelled. I learnt from them that in Mecklenburg, Prussia, Holland, &c., 14 quarts of milk yield, on the average, 1 lb. of butter; in rare instances 12 quarts are found to yield 1 lb. Both attach great importance to the regulation of the temperature. Mr. Mendelssohn tells me that the milk from cows fed on draff (distiller's refuse) requires a higher temperature to induce its yield of butter than that from cows supplied with other food.

On inquiry in my own neighbourhood, I find it is computed that each quart at a milking represents 1 lb. of butter per week. Thus a cow which gives 4 quarts at each milking will yield in butter 4 lbs. per week, or from 56 quarts 64 oz. of butter, or from 14 quarts of milk 1 lb. of butter. Taking the winter produce alone, it is lower than this; the cream from my neighbour's cows, who use common food, hay, straw, and oats, somewhat resembles milk in consistency, and requires three to four hours, sometimes more, in churning. On one occasion a neighbouring dairywoman sent to borrow my churn, being unable to make butter with her own; I did not inquire the result. If she had sent her cow, I could in the course of a week have insured her cream which would make butter in half an hour. These dairy people usually churn during winter in their kitchen, or other room with a fire. Each of them states that from bean or oat meal used during winter as an auxiliary food, they derive a greater quantity of butter, whilst those who have tried linseed oil have perceived no benefit from it.

My own cream during the winter season is of the consistency of paste or thick treacle. When the jar is full, a rod of 2 feet long, when dipped into the cream to half its length, stand erect. If I take out a teacup-full in the evening and let it stand till next morning, a penny piece laid on its surface will not sink; on taking it off I find the underside partially spotted with cream. The churnings are performed in a room without fire, at a temperature in winter of 43 deg. to 45 deg., and occupy one-half to three-quarters of an hour.

Several who have adopted my system have reported similar effects—an increase in the quantity with a complete change as to richness of quality. I select from these Mr. John Simpson, a tenant-farmer residing at Ripley, in Yorkshire, who at my request stated to the Committee of the Wharfdale Agricultural Society that he and a neighbour of his, being inconvenienced from a deficient yield of milk, had agreed to try my mode of feeding, and provided themselves with a steaming apparatus. This change of treatment took place in February, 1855. I quote his words:—

"In about five days I noticed a great change in my milk, the cows yielded 2 quarts each per day more, but what surprised me most was the change in the quality; instead of poor winter cream and butter, they assumed the appearance and character of rich summer produce, it only required 20 minutes for churning, instead of two to three hours; there was also a considerable increase in the quantity of butter, of which, however, I did not take any particular notice. My neighbour's cow gave 3 quarts per day in addition, and her milk was so changed in appearance that the consumers to whom he sold it became quite anxious to know the cause."

My dairy is but 6 feet wide by 15 long, and 12 high; at one end (to the north) is a trellis window, at the other an inner door which opens into the kitchen. There is another door near to this which opens into the churning-room, having also a northern aspect; both doors are near the south end of the dairy. Along each side, and the north end, two shelves of wood are fixed to the wall, the one 15 inches above the other; 2 feet higher is another shelf, somewhat narrower but of like length, which is covered with charcoal, whose properties as a deodorizer are sufficiently established. The lower shelves being 2 feet 3 inches wide, the interval or passage between is only 1 foot 6 inches. On each tier of shelves is a shallow wooden cistern lined with thin sheet-lead, having a rim at the edges 3 inches high. These cisterns incline downwards slightly towards the window, and contain water to the depth of 3 inches. At the end nearest the kitchen each tier of cisterns is supplied with two taps, one for cold water in summer, the other with hot for winter use. At the end next the north window is a plug or hollow tube, with holes perforated at such an elevation as to take the water before it flows over the cistern.

During the summer the door towards the kitchen is closed, and an additional door is fixed against it, with an interval between well packed with straw; a curtain of stout calico hangs before the trellis window, which is dipped in salt-water, and kept wet during the whole day by cold water spurted over it from a gutta-percha tube. On the milk being brought in it is emptied into bowls. Some time after these bowls (of which a description is given in a former part of this) have been placed on the cistern, the cold-water taps are turned till the water rises through the perforated tube, and flows through a waste pipe into the sewer. The taps are then closed, so as to allow a slight trickling of water, which continues through the day. By these means I reduce the temperature, as compared with that outside the window, by 20 deg. I am thus enabled to allow the milk to stand till the cream has risen, and keep the skimmed milk sweet, for which I obtain 1d. per quart.

Having heard complaints during very hot weather of skimmed milk, which had left my dairy perfectly sweet, being affected so as to curdle in cooking on being carried into the village, I caused covers of thick calico (the best of our fabrics for retaining moisture) to be made; these are dipped in salt-water and then drawn over the whole of the tin milk cans: the contrivance is quite succesful, and it is in great favour with the consumers. I have not heard a single complaint since I adopted it.

Finding my butter rather soft in hot weather I uncovered a draw-well, which I had not used since I introduced water-works for the supply of the village and my own premises. On lowering a thermometer down the well to a depth of 28 feet, I found it indicated a temperature of 43 deg.—that on the surface being 70 deg. I first let down the butter, which was somewhat improved, but afterwards the cream; for this purpose I procured a moveable windlass, with a rope of the required length; the cream-jar is placed in a basket 2 feet 4 inches deep, suspended on the rope, and let down the evening previous to churning. It is drawn up early next morning and immediately churned; by this means the churning occupies about the same time as in winter, and the butter is of like consistency.

The advantage I derive from this is such that, rather than be without it, I should prefer sinking a well for the purpose of reaching a like temperature.

When winter approaches, the open trellis window to the north is closed, an additional shutter being fixed outside, and the interval between this and an inner shutter closely packed with straw to prevent the access of air and cold; the door to the kitchen is at the same time unclosed to admit warmth. Before the milk is brought from the cowhouse the dairymaid washes the bowls well with hot water, the effect of which is to take off the chill but not to warm them; the milk is brought in as milked, and is passed through a sile into the bowls, which are then placed on the cistern. A thermometer, with its bulb immersed in the milk, denotes a temperature of about 90 deg. The hot water is applied immediately at a temperature of 100 deg. or upwards, and continues to flow for about five minutes, when the supply is exhausted. The bowls being of thick earthenware—a slow conductor—this does not heighten the temperature of the milk. The cooling, however, is thereby retarded, as I find the milk, after standing four hours, maintains a temperature of 60 deg. This application of hot water is renewed at each milking to the new milk, but not repeated to the same after it has cooled. The temperature of the dairy is momentarily increased to above 60 deg., but speedily subsides, the average temperature being 52 deg. to 56 deg.

It will be observed that the churnings in summer and winter occupy half-an-hour or upwards; by increasing the temperature of the cream I could easily churn in half the time, but I should thereby injure the quality of the butter. When the butter has come, and gathered into a mass, it is taken, together with the buttermilk, out of the churn, which is rinced with water; the butter is then placed again in the churn, with a quantity of cold spring water in which salt has been dissolved, at the rate of 1 oz. per quart of cream; after a few minutes' churning, the butter is again taken out; the water in which it has been washed assumes a whitish appearance. By this process the salt is equally diffused through the butter, which requires little manipulation, and is freed from a portion of caseous matter. A recent analysis of my butter shows only 1·07 instead of 2·45 per cent. of casein, as before; that it ranks as choice may be inferred, when I state that my purchaser willingly gives me 1d. per roll more than the highest price in Otley market, and complains that I do not supply him with a greater quantity.

In this dairy, of the small dimensions I have described, my produce of butter reaches at times 60 to 70 lbs. per week. Though the size may appear inconveniently small, yet I beg to remark on the greater facility of regulating the temperature of a small in comparison with a large dairy. This difficulty will be found greater in summer than in winter, as it is far easier to heighten than depress the temperature.

I have cooked or steamed my food for several years. It will be observed that I blend bean-straw, bran and malt combs, as flavouring materials, with oat or other straw and rape-cake: the effect of steaming is to volatilize the essential oils, in which the flavour resides, and diffuse them through the mess. The odour arising from it resembles that observed from the process of malting: this imparts relish to the mess, and induces the cattle to eat it greedily; in addition to which I am disposed to think that it renders the food more easy of digestion and assimilation. I use this process with advantage for fattening, when I am deficient in roots. With the same mixed straw and oat-shells, 3 to 4 lbs. each of rape-cake, and ½ lb. of linseed oil, but without roots, I have fattened more than 30 heifers and cows free from milk, from March up the early part of May; their gain has averaged fully 14 lbs. each per week—a result I could not have looked for from the same materials if uncooked; this process seems to have the effect of rendering linseed oil less of a laxative, but cannot drive off any portion of the fattening oils, to volatilize which requires a very high temperature. My experience of the benefits of steaming is such, that if I were deprived of it I could not continue to feed with satisfaction.

I have weighed my fattening cattle for a number of years, and my milch cows for more than two years; this practice enables me at once to detect any deficiency in the performance of the animals; it gives also a stimulus to the feeders, who attend at the weighings, and who are desirous that the cattle entrusted to their care should bear a comparison with their rivals. Another obvious advantage is in avoiding all cavils respecting the weight by my purchasers, who, having satisfied themselves as to the quality of the animal, now ask and obtain the most recent weighing. The usual computation for a well-fed, but not over fat beast, is, live to dead weight as 21 to 12, or 100 to 57 1-7th, with such modifications as suggest themselves by appearances.

Though many discussions have taken place on the fattening of cattle, the not less important branch of dairy treatment has hitherto been comparatively neglected. I therefore venture to call attention to considerations which have arisen from observations in my own practice, affecting the chemistry and physiology, or, in other words, the science of feeding. That I am seeking aid from its guidance will be apparent, and I have no hesitation in admitting, that beyond the satisfaction from the better understanding of my business, I have latterly derived more benefit or profit from examination of the chemical composition of materials of food than from the treatment or feeding experiments of others which have come under my notice. So persuaded am I of the advantage of this, that I do not feel satisfied to continue the use of any material, with the composition of which I am not acquainted, without resorting to the Society's Laboratory for an analysis.

To one leading feature of my practice I attach the greatest importance—the maintenance of the condition of my cows, giving a large yield of milk. I am enabled, by the addition of bean-meal in proportion to the greater yield of milk, to avert the loss of condition in those giving 16 to 18 quarts per day; whilst on those giving a less yield, and in health, I invariably effect an improvement. Nos. 2 and 7, in stall A, may be regarded as ordinary results from my treatment.

When we take into consideration the disposition of a cow to apply her food rather to her milk than to her maintenance and improvement, it seems fair to infer that the milk of a cow gaining flesh will not be deficient either in casein or butter.

I have already alluded to the efficiency of bean-meal in increasing the quantity of butter: I learn also, from observant dairymen who milk their own cows, and carry their butter to market, that their baskets are never so well filled as when their cows feed on green clover, which, as dry material, is nearly as rich in albumen as beans. I am also told, by those who have used green rape plant, that it produces milk rich in butter. From this we may infer that albuminous matter is the most essential element in the food of the milch cow, and that any deficiency in the supply of this will be attended with loss of condition, and a consequent diminution in the quality of her milk.

I am clearly of opinion that you can increase the proportion of butter in milk more than that of casein, or other solid parts. From several, who have adopted my treatment, I learn that, on substituting rapecake for beans, they perceive an increased richness in their milk. Mr. T. Garnett, of Clitheroe, who has used bean-meal largely as an auxiliary food for milch cows during the winter season, tells me that, when rapecake is substituted, his dairymaid, without being informed, perceives the change from the increased richness of the milk. Mr. Garnett has also used linseed-cake in like quantity; still, his dairy people prefer rape-cake.

Mr. Whelon, of Lancaster, who keeps two milch cows for his own use, to which he gave bean-meal and bran as auxiliaries, has recently substituted rape-cake for bean-meal. He informed me that in a week he perceived a change in the richness of the milk, with an increase of butter.

The vegetable oils are of two distinct classes—the *drying* or *setting* represented by linseed, the *unctuous* represented by rape-oil. They consist of two proximate elements—margerine and olein: in all probability they will vary in their proportion of these; but in what degree, I have not been able to ascertain. Though the agricultural chemists make no distinction, as far as I am aware, between these two classes of oils, the practitioners in medicine use them for distinct purposes. Cod-liver oil has been long used for pulmonary complaints: latterly, olive, almond, and rape-oils are being employed as substitutes. These are all of the unctuous class of oils. Mr. Rhind, the intelligent medical practitioner of this village, called my attention to some experiments by Dr. Leared, published in the *Medical Times*, July 21st, 1855, with olein alone, freed from margerine, which showed marked superiority in the effect; and I now learn from Mr. Rhind that he is at present using with success the pure olein, prepared by Messrs. Price and Co. from cocoa-nut oil, one of the unctuous class. That linseed, and others of the drying oils, are used in medicine for a very different purpose, it seems unnecessary to state.

The olein of oil is known to be more easy of consumption and more available for respiration than margerine—a property to which its use in medicine may be attributable.* If we examine the animal fats, tallow, suet, and other fat, they are almost wholly of the solid class, stearine or margerine, closely resembling or identical with the margerine in plants; whilst butter is composed of olein and margerine, combining both the proximate elements found in vegetable oils.

It seems worthy of remark that a cow can yield a far greater weight of butter than she can store up in solid fat. Numerous instances occur where a cow gives off 2lbs. of butter per day, or 14lbs. per week, whilst half that quantity will probably rarely be laid on in fat. If you allow a cow to gain 16lbs. per week, and reckon 7 for fat, there will only remain 9lbs. for flesh, or, deducting the moisture, scarcely 3lbs. (2.97) per week, equal to .42, or less than half-a-pound per day, of dry fibrine.

The analyses of butter show a very varying proportion of olein and margerine fats. Summer butter usually contains of olein 60, and margerine 40 per cent., whilst in winter butter these proportions are reversed, being 40 of olein to 60 of margerine. By ordinary treatment the quantity of butter during winter is markedly inferior: the common materials for dairy-cows in winter are straw with turnips or mangel, hay alone, or hay with mangel. If we examine these materials, we find them deficient in oil, or in starch, sugar, &c. If a cow consume 2 stones, or 28lbs., of hay a-day, which is probably more than she can be induced to eat on an average, it will be equal in dry material to more than 100lbs. of young grass, which will also satisfy a cow. That 100lbs. of young grass will yield more butter, will scarcely admit of a doubt. The 28lbs. of hay will be equal in albuminous matter and in oil to the 100lbs. of grass; but in the element of starch, sugar, &c., there is a marked difference. During the growth of the plant, the starch and sugar are converted into woody fibre, in which form they are scarcely digestible or available for respiration. It seems, then, not improbable that, when a cow is supplied with hay only, she will consume some portion of the olein oil for respiration, and yield a less quantity of butter, poorer in olein.

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* See "Lehman's Physiological Chemistry."

	Per Cent.
If you assume summer butter to contain of olein	60
,, ,, of margerine	40
	100
If the cow consume of the olein	36
The quantity of butter will be reduced from 100 to....	64
And the proportions will then be—of olein	40
,, ,, of margerine	60
	100

If you supply turnips or mangel with hay, the cow will consume less of hay: you thereby substitute a material richer in sugar, &c., and poorer in oil. Each of these materials in the quantity a cow can consume is deficient in the supply of albumen necessary to keep up the condition of an animal giving a full yield of milk. To effect this, recourse must be had to artificial or concentrated substances of food, rich in albuminous matter.

It can scarcely be expected, nor is it desirable, that practical farmers should apply themselves to the attainment of proficiency in the art of chemical investigations: this is more properly the occupation of the professor of science. The following experiment, however, seems worth mentioning. On several occasions, during winter, I procured samples of butter from my next neighbour: on placing these, with a like quantity of my own, in juxtaposition before the fire, my butter melted with far greater rapidity—by no means an unsafe test of a greater proportion of olein.

The chemical investigation of our natural and other grasses has hitherto scarcely had the attention which it deserves. The most valuable information on this subject is in the paper by Professor Way on the nutritive and fattening properties of the grasses, in vol. xiv., p. 171, of the *Royal Agricultural Society's Journal*. These grasses were nearly all analyzed at the flowering time, a stage at which no occupier of grass-land would expect so favourable a result in fattening. We much prefer pastures with young grass not more than a few inches high, sufficient to afford a good bite. With a view to satisfy myself as to the difference of composition of the like grasses at different stages of growth, I sent to Professor Way a specimen of the first crop of hay, cut in the end of June, when the grass was in the early stage of flowering, and one of aftermath, cut, towards the close of September, from the same meadow, the analyses of which I give:

HAY, FIRST CROP.		AFTERMATH HAY.	
Moisture	12 02	Moisture	11.87
Albuminous matter ...	9.24	Oil and fatty matter ..	6.84
Oil and fatty matter ..	2.68	Albuminous matter ..	9.84
Starch, gum, sugar ...	39.75	Starch, gum, sugar ..	42.25
Woody fibre	27 41	Woody fibre..........	19.77
Mineral matter	8.90	Mineral matter	9.43
	100.00		100.00

A comparison between these will show a much greater per-centage of woody fibre—27.41 in the first crop, to 19.77 in the aftermath. The most remarkable difference, however, is in the proportion of oil, being 2.68 in the first crop, to 6.84 in the aftermath.

On inquiry from an observant tenant of a small dairy-farm of mine, who has frequently used aftermath hay, I learn that, as compared with the first crop, he finds it induce a greater yield of milk, but attended with some impoverishment in the condition of the cow, and that he uses it without addition of turnips or other roots, which he gives when using hay of the first crop—an answer quite in accordance with what might be expected from its chemical composition.

It is likewise to be presumed that the quickness of growth will materially affect the composition of grasses, as well as of other vegetables. Your gardener will tell you that, if radishes are slow in growth, they will be tough and woody; that asparagus melts in eating, like butter; and salad is crisp, when grown quickly. The same effect will, I apprehend, be found in grasses of slow growth: they will contain more of woody fibre, with less of starch or sugar. The quality of butter grown on poor pastures is characterised by greater solidity than on rich-feeding pastures: the cows, having to travel over more space, require a greater supply of the elements of respiration, whilst the grasses grown on these poor pastures contain, in all probability, less of these in a *digestible form* available for respiration. The like result seems probable as from common winter treatment—a produce of butter less in quantity, and containing a greater proportion of margerine, and a less of olein.

It is well known that pastures vary greatly in their butter-producing properties: there is, however, as far as I am aware, no satisfactory explanation of this. If you watch cows on depasture, you observe them select their own food: if you supply cows in stall alike with food, they will also select for themselves. I give rape-cake as a mixture to all, and induce them to eat the requisite quantity; yet some will select the rape-cake first, and eat it up clean, whilst others rather neglect it till towards the close of their meal, and then leave pieces in the trough. Two Alderneys—the only cows of the kind I have as yet had—whose butter-producing qualities are well known, are particularly fond of rape-cake, and never leave a morsel: may not these animals be prompted by their instinct to select such food as is best suited to their wants and propensities? If so, it seems of the greatest importance that the dairyman should be informed of the properties of food most suitable for his purpose, especially whilst in a stall, where they have little opportunity of selecting.

It appears worth the attention of our Society to make inquiries as to the localities which are known as producing milk peculiarly rich in butter. When travelling in Germany, I well recollect being treated with peculiarly rich milk, cream, and butter, on my tour between Dresden and Toplitz, at the station or resting-place, on the chaussée, or turnpike-road, before you descend a very steep incline to the valley in which Toplitz is situated. I travelled this way after an interval of seven years, when the same treat was again offered. It was given as a rarity, and can only be accounted for by the peculiar adaptation of the herbage of the country for the production of butter.

Burley Hall, Yorkshire, May, 1856.

P.S., *June 7th*, 1856.—Having had occasion to visit London, I called upon Mr. J. F. Wilson, director of Messrs. Price's manufactory at Belmont. In addition to other interesting information in regard to the properties of fats, Mr. Wilson kindly supplied me with a Treatise on Oils, by Jules de Fontenelle, à Paris, from which I supply the following particulars:

	Reamur.		Olein.	Stearine.
Olive oil congeals at a temperature of	+ 2	=	72	28
Rape-oil at..........................	— 5	=	54	46
Linseed-oil at	—22		No analysis.	

Olive-oil is by far the richest in olein, which accounts for its extended use in cooking, more especially on the Continent, where it is a principal ingredient in culinary preparations.

The analysis of rape-oil corresponds precisely in its proportion of olein and margerine with that of butter of fair quality.

Jules de Fontenelle very properly observes that an analysis of each of the vegetable oils could not fail to be of the greatest interest.

I may add that we agriculturists have a claim upon our professors of chemistry to give their attention to like investigations.—*Journal of the Royal Agric. Society.*

SIXTEENTH GENERAL REPORT OF THE EMIGRATION COMMISSIONERS.

Blue Books have fallen into undeserved disrepute. Lazy critics complain that they are too voluminous to read ; but if they were less copious in facts, and if those facts were not sustained by ample and authentic evidence, the querulous commentator would find fault with their brevity, or deny that they were trustworthy. The wise have long ceased to make any effort to please all parties, and we must leave the discontented to the enjoyment of their own murmurings. To us it appears that ths Government Blue Books are among the most valuable records of cotemporary history, and the future annalist will consult them as the most faithful repositories of the spirit of our times. In our days they must be judged by a standard peculiar to themselves. Most assuredly they are not addressed to those whose studies are confined to fashionable novels and exciting tales of romance; to such persons their perusal would be most repulsive, and few severer penalties could be inflicted on that class than to compel them to read and digest these bulky tomes. It is also true that many who desire to possess the knowledge they contain have not sufficient time to devote to their contents; but the utility of their publication is not depreciated upon that account. Considering the subject from this point of view, it evidently falls within the sphere of the journalist, and it becomes his duty to condense the substance of the Blue Books, and impart that useful information in a readable form which those engaged in the active business of practical life have not leisure to glean.

The Report before us is one of considerable interest, as it embraces the varied relations which exist between the mother country and the colonies. The agriculture of the three kingdoms, though independent in itself, is still intimately connected with the agriculture of our transmarine possessions ; and to prove this, we need only refer to the recent sale of the shorthorned bull, Master Butterfly, to a breeder in Geelong for the magnificent sum of twelve hundred guineas. As time advances, and the colonies increase in wealth, this kind of trade will certainly be extended. The production of colonial wool has for many years had its effect on our home markets. As the old folly of manufactures and agriculture being antagonistic is now happily exploded, every reasonable man admits that large towns constitute the best market for broad acres ; if, then, our manufacturers find increasing and remunerating markets for their products in the colonies, the colonies react on our domestic agriculture, as our factory towns becoming enriched by purchases made from them by this new class of customers are enabled to buy more from our farmers. Under this aspect, all that relates to emigration becomes deeply interesting to the readers of this journal ; for thousands, and hundreds of thousands, who quit our shores to seek a new home in distant lands, there become opulent; whereas had they remained in Britain or Ireland they must have dragged on a precarious existence, not adding to the general wealth, but swelling the gloomy array of pauperism. Besides, it is ordained that the human family should people the whole earth, not by a harsh, but by a truly benevolent decree ; since it is plain that they who retire from overcrowded districts, where labour and subsistence are scarce, pursue their own happiness, for which provision is made on an unoccupied soil. To form a true idea of a market, be it noted that every hand is designed to be a producer, and every mouth a consumer ; consequently the dispersion of man over the earth, where there is room for all, is the multiplier of markets—navigation being the instrument of exchange, because it is the carrier of goods.

It appears from the Report before us that, from the close of the Peninsular War to the end of the year 1855, 4,293,765 persons have left the United Kingdom ; of whom 2,621,609, or over 61 per cent., have emigrated during the last nine years. It does not appear that the motives to emigration were strong in the first years that followed the battle of Waterloo ; for between 1816 and 1830, both years inclusive, the greatest number who quitted our shores in any one year was 56,907, and the average of the whole period was only 24,582. We take the following passages from the Report :—

> "In the next fifteen years, ending with 1845, the average rose to 78,093 , the largest emigration having been 123,344, in 1842. In 1846, the emigration reached 129,851 ; but in 1847, in consequence of the Irish famine, began the movement to which the name exodus has been applied, which in the eight years ending with 1854 carried away from the United Kingdom no less than 2,444,802 souls, or an average of 305,600 souls a year. The largest emigration which has taken place was in 1852, when it amounted to 388,764 souls ; in 1853 the number fell to 329,937, in 1854 to 323,429, and in in 1855 it was only 176,807. Thus in 1855 it was less than half what it had been in 1852, and less than three-fifths the average of the eight years ending with 1854."

The preceding figures refer to the whole population of the United Kingdom ; but it may be interesting to place that of Ireland in a separate classification. For the years annexed it stood thus :—

1851	254,537
1852	224,997
1853	192,609
1854	150,209
1855	78,854

For this continuous decline in Ireland several reasons may be assigned. The first line of figures of course refers to the total population in 1851; in 1852 that population necessarily became less exactly in the ratio of the emigration of the preceding year, and this rule holds good throughout the whole series. This alone would diminish the figures as representing numbers; still the proportions relative to those who remained in the country might not exhibit a diminished per-centage, and if so, there would be no positive proof of the interposition of a restraining check, but such a check is to be found, arising out of the operation of the Encumbered Estates Act, which transferred land from a pauper to a rich proprietary. Capital expended on improvements detained labour at home; and that labour declined to expatriate itself when wages rose, and employment became certain. We have before us the last Report of the Irish Poor Law Commissioners, whence it appears that agricultural wages rose from 6d. and 9d. per day to 5s. and up to 8s. and 9s. per week.

Another check was the policy of the new party in the United States called "Know Nothings," who discouraged Irish and Roman Catholic immigrants: and without laying any great stress on this point, it deserves notice. But perhaps the most important check on recent emigration was the Russian war, which drew very many of the class most likely to quit our shores into the regular army and the militia; it is probable, therefore, peace being restored, that the movement, temporarily restrained, may take a fresh spring onward. We cannot quit this branch of our subject without paying a just meed of praise to the affectionate character of the Irish, the first emigrants remitting monies out of their savings in the United States to defray the voyage of their poor brethren who remained behind. The aggregate sum would appear incredible were it not attested by the principal bankers and merchants connected with America, through whom the remittances were received, and certified to the Commissioners. It appears that the amounts so forwarded since 1848, the first year in which authentic information exists, down to the end of 1855, figure at £8,393,000: of course this does not include private remittances, the amount of which cannot be ascertained.

In the Report before us a comparison is instituted between the emigration to British North America and to the United States. "In the earlier years the emigration proceeded rather to British North America than to the United States; so that between 1816 and 1834, of 669,725 persons who emigrated to the American continent, 402,301 went to British North America, and only 267,424 to the United States. Since 1835 the preponderance has been continually the other way; and of 3,053,294 persons who have emigrated in the twenty-one years between January 1, 1835, and December 31, 1855, 2,323,312 have gone to the United States, and only 729,982 to British North America."

Whoever has studied Lord Durham's Report on Canada, will readily understand why the United States had the preference. The pernicious hand of the Colonial Office then pressed heavily on our North American provinces, and an ignorant and presumptuous interference cramped the best energies of the colonists. Those days are happily past; and under the Anglo-Saxon principle of self-government, Canada is now advancing with giant strides to the dignity of a mighty nation. It may, indeed, take time to turn back emigration into its old channel, but now that Canada has established regular steam communication of her own from Montreal to Liverpool, this new facility may neutralise the former attractions of the route by New York.

In the emigration to Australia there was a considerable falling off in 1855 as compared with 1854. The returns of the two years show the following decrease:—

	Assisted emigrants.	Unassisted.	Total.
1854	41,066	42,172	83,238
1855	28,016	24,293	52,309
Decrease..	13,050	17,879	30,929

In New South Wales, in 1854, which is the latest return, there were sold 83,396 acres, in towns, suburban, and country lots. The first-class averaged about £63 per acre; the second, £3 18s. 6d.; the third, rather less than 30s. The total amount of purchase-money was £272,000 paid to government for land revenue, and further £52,912 for leases, licences, and quit-rents. In 1854 there were only 74,537 acres under wheat, while to supply the wants there ought to have been 112,000 acres.

In Victoria, 404,472 acres were sold, realizing to government £1,378,000. The town lands averaged £245 per acre; the suburban lands, £7 10s.; the country lands, about two guineas. This is remarkable, as the population of the colony only consisted of 273,792 persons.

In South Australia there were sold 213,925 acres, realizing £377,303. The extent of the whole alienated land up to 1854 was 1,217,323, and of unalienated upwards of 196 millions, so that there is ample room for a great empire. The sheep runs, occupied under 14 years' leases, extend over ten millions of acres, and maintain upwards of a million and a-half of sheep. The weight of the prize cereals at the agricultural exhibition of 1855 was, wheat 64lbs. 14oz., 65lbs. 12oz., 64lbs. 15oz.; oats 44lbs. 2oz., 41lbs. 13oz.; barley 59lbs. 2oz., 54lbs. 14oz. the bushel measure.

In Western Australia 2,232 acres were sold in 1854. The town lots fetched £24; the suburban, £4 16s.; and the country lots a fraction more than 20s. per acre.

In Van Diemen's Land the imports amounted to £2,604,680, of which £1,776,694 came from Great Britain. The extent of land under cultivation was 127,732 acres, and the colony had 1,831,308 sheep.

There was no emigration to New Zealand in 1855 under the Board.

The number of immigrants into Canada in 1855 was only 20,243; in 1854 it amounted to 52,365, showing a decrease of 32,122.

The only important fact communicated from the Mauritius is, that since the labour of Coolies has been substituted for that of Creoles, the sugar crop in the island has increased from 70 to more than 200 millions of pounds.

There is no information of any interest from the Cape of Good Hope or Natal.

THE NORTH LANCASHIRE AGRICULTURAL SOCIETY.

MEETING AT PRESTON.

This exhibition took place at Preston, on the 27th and 28th of August, under as unfavourable circumstances of temperature and weather as could possibly be imagined. During the whole of Thursday sheets of a penetrating rain, with some very slight intervals of abatement, never ceased to fall during the whole morning; and it was only late in the afternoon, when every one had left the miry field where the show was held, that the weather somewhat relented and cleared. Had it not been for this unfortunate circumstance, it is our conviction that this exhibition would have proved one of the most successful the Society ever held. In the Shorthorn class, the mere fact of Mr. Towneley having sent ten of his best animals, and Mr. Ambler his now unrivalled bull, Grand Turk, which, since Master Butterfly's departure, has it all his own way, was sufficient to stamp the exhibition of this class with no ordinary distinction and interest. But the weather was so unmerciful—the rain beat so provokingly into one's face—the poor exhibited animals were so cloaked up with rugs and blankets, that the judges must have had a very unpleasant task in fulfilling their duty. As to the public, they must of necessity have taken everything for granted, as anything like a close inspection was a sheer impossibility.

The show of horses was extremely good; there were no less than 128 exhibited, and, as far as we were able to examine them, a large proportion appeared very commendable. The sheep, comprising the Leicester and Southdown breeds, were said to be good, although to the mere spectator it was a matter of great difficulty to appreciate their merits under the circumstances of the weather. As to the pigs, we have rarely seen such a beautiful lot. Mr. Towneley exhibited a boar and a sow of the small breed, which were very remarkable; the boar carried away the first prize. As might well be expected, the company was not large, and consisted chiefly of exhibitors and their friends, and of such distinguished agriculturists whom nothing will deter from attending an exhibition of this kind.

By the list of prizes which we subjoin, it will be found that in the Short-horn class all the honours were carried by Mr. Towneley. In the aged bull class, Mr. Ambler's celebrated Grand Turk obtained the first prize, and the silver medal for the best male animal in the yard. We regretted to see a gentleman, who boasts of so many good animals in his herd, exhibiting only one in this show. This was scarcely worthy of his well-deserved fame as a breeder, although, taking the weather into consideration, we can but congratulate him for having thus restricted his entry. Under such weeping skies it was indeed one too many.

Mr. Towneley obtained the silver medal for the best female in the cattle classes; and that honour was gained by the first prize heifer calf at Rotherham.—Rose-blossom, out of Rose-leaf, sold a few weeks since to the French Government, and grand-daughter to the famous Rosa. This heifer promises to be one of the best Mr. Towneley ever had. The second prize was gained by another of Mr. Towneley's heifers, Buttercup 2nd, a very beautiful animal, which, we understand, is likely to cross the English Channel, and further develope her perfections in the rich pastures of Normandy, whither she will be accompanied by a no less remarkable animal—we mean Fredericka II.—another of Mr. Towneley's best, to which the second prize in the cow class was awarded.

The principal event of this exhibition was undoubtedly the dinner—not indeed for anything very extraordinary in the fare, which was very good to those who were fortunate enough to get a waiter to attend to them, or who had judgment enough to help themselves, but for the fact of its being presided over by no less a personage than Lord Stanley. Some railway disappointment delayed the noble lord till the eating part of the ceremony was nearly at an end, but at that period his welcomed entrance into the Corn Market was greeted with that applause which farmers and soilers alone know how to give. His Lordship's speech was very remarkable. The other speakers were, what they usually are, wholly beside the question, descanting at a terrible length upon everything save the subject of the toast under consideration. We seldom had to undergo such an infliction. From this we must except Mr. Towneley's short speech, which really bore upon the subject he had to deal with.

We really think that a reform is absolutely necessary in these after-dinner attempts at agricultural eloquence. Speakers ought to be bound to a certain limit of time, and compelled to confine their remarks to the subject entrusted to them. Mr. Wilson Patten proposed also the health of M. R. de la Trehonnais, who happened to be present, to which that gentleman briefly replied.

PRIZES FOR STOCK.

SHORTHORNS.

JUDGES.—John Booth, Killerby, Catterick, Yorkshire.
William Hunt, Wortley, Sheffield.

BULLS.

Best bull, two years old or upwards, the society's silver medal, or £5, Henry Ambler, Watkinson Hall, Halifax.

Best bull, above one and under two years old, £5, Samuel Clough, Ashton, Warrington.

Best bull calf, under twelve months old, £2 10s., Thomas Harrison, Tarleton; second best, Lieut.-Col. Towneley, Towneley Park, Burnley.

COWS OR HEIFERS.

Best cow or heifer, above three years old, and in calf or milk, £3, Lieut.-Col. Towneley.

Best heifer, above two and not exceeding three years old, and in calf or milk, £3, Lieut.-Col. Towneley.

Best heifer, not exceeding two years old, £3, Lieut.-Col. Towneley.

Best heifer calf, £2, Lieut.-Col. Towneley.

CATTLE OF ANY OTHER BREED.

BULLS.

Best bull, calved previous to the 1st day of January, 1854, £10 and silver medal, John Cartmell, Westby, Lytham; second best, £2 10s. and silver medal, Dorothy Winder, Laithwaite, Cockerham.

COWS OR HEIFERS.

Best cow, in calf or milk, and above four years old, £3, John Cartmel, Westby, Lytham.

Best heifer, not exceeding four years old, and in calf or milk, £5, John Hall, Aldcliffe, Lancaster.

Best heifer, not exceeding three years old, and in calf or milk, £5, John Cartmel, Westby, Lytham.

Best heifer, not exceeding two years old, £3, John Hall, Aldcliffe.

Best heifer calf, £2, Jas. Moon, Carr Hall, Burnley.

HORSES.

JUDGES.—James Brogden, Manchester.
William Longton, Rainhill, Liverpool.

Best brood mare for agricultural purposes, being in foal, or having produced a foal in 1856, £5, R. C. Richards, Kirkham.

Best brood mare, for road or field, being in foal, or having produced a foal in 1856, £5, Thomas Knipe, Hest Bank, Lancaster.

Best three-year-old gelding or filly, for agricultural purposes, £3, Richard Dandy, Penwortham, Preston.

Best three-year-old gelding or filly, for road or field, £3, Mary Stuart, Sowerby Hall, St. Michaels-on-Wyre, Garstang.

Best two-year-old gelding or filly, for agricultural purposes, £2, Cornelius Crookall, Lytham.

Best two-year-old gelding or filly, for road or field, £2, John Cartmel, Westby, Lytham.

Best yearling colt or filly, for agricultural purposes, £1 10s., R. C. Richards, Kirkham.

Best yearling colt or filly, for road or field, £1 10s., John Cartmel, Westby, Lytham.

Best colt or filly foal, for agricultural purposes, £1, John Owen, Great Blackrod.

Best colt or filly foal, for road or field, £1, Richard Eastwood, Swineshawe House, Rawtenstall.

SHEEP.

JUDGES.—William Sanday, Holme Pierrepont, Nottingham.
Thomas Mason, Little Stainton, Skipton.

Best shearling ram of the Leicester breed, £3, J. Wilson Patten, Winmarleigh, Garstang.

Best ram of the same breed, of any other age, £2, James Robinson, Loweswater, Cumberland.

Best shearling ram of the Southdown breed, £3, Earl of Burlington, Holkes Hall, Milnthorpe.

Best ram of the same breed, of any other age, £2, Richard Eastwood, Swineshawe House, near Rawtenstall.

Best shearling ram of any other description of Down, or any other short-woolled sheep, £3, Robert Robinson, Ulverston.

Best ram of any other age, of any other description of Down, or any other short-woolled sheep, £2, Thomas Langton, Birley, Carr Hill, Kirkham.

Best pen of five Leicester ewes, each having reared a lamb in 1856, £2, J. Wilson, Patten, Winmarleigh, Garstang.

Best pen of five shearling ewes of the same breed, £2, James Bromley, Lancaster.

Best pen of five Southdown ewes, each having reared a lamb in 1856, £2, Earl of Burlington, Holker Hall, Milnthorpe.

Best pen of five shearling ewes of the same breed, £2, Earl of Burlington, Holker Hall, Milnthorpe.

Best pen of five ewes of any age, of any description of Down sheep, or any other short-woolled sheep, each having reared a lamb in 1856, £2, Robert Robinson, Ulverston.

EXTRA STOCK.

C. R. Jacson, Barton Lodge, Preston, a pen of five Leicester ewes, five months.

PIGS.

JUDGES.—Jos. Tuley, Holy Croft, Keighley.
Thos. Mason, Little Stainton, Skipton.

Best boar of the large breed, of any age, £3 3s., John Harrison, jun., Heaton Norris, Stockport.

Best boar of the small breed, of any age, £3, Lieut.-Col. Towneley, Towneley Park, Burnley.

Best breeding sow of the large breed, in pig or milk, £2, Thos Robinson, Blackbrook House, Levenshulme, Manchester.

Best breeding sow of the small breed, in pig or milk, £2, Joseph Hindson, Barton House, Everton, Liverpool.

AGRICULTURAL IMPLEMENTS.

JUDGES.—Francis Twining, Parbold Hall, Wigan.
Alexander Begbie, Westby, Lytham.
William Roberts, Thorny Holme, Burnley.
John Logan, Barton Cottage, Preston.
John Rawes, Farnworth House, Chorley.
James Hartley, Ighton Hill Park, Burnley.

Best reaping and mowing machine, £10 and silver medal, Robert Birch, Stanah House, Netherton (Hussey's), improved by Dray and Co.

Best thrashing machine, £5 and silver medal, Williamson Brothers, Kendal (five-horse).

Best swing plough, £2, J. B. Stainton and Son, Milton, Kendal.

Best wheel plough, £2, William Lazenby, Fenniscowles.

Best pair-horse grubber, £2, Robert Wilson Ffrance, Rawcliffe Hall, Garstang.

Best corn drill, £2, Thomas Townley Parker, Astley Hall, Chorley.

Best pair of heavy harrows, £1, R. Forshaw and Co., Atlas Works, Liverpool.

Best pair of light harrows, £1, Robert Wilson, Warton, Lancashire.

Best horse hoe on ridge, £2, John Whitehead, Preston.

Best turnip drill on ridge, £2, John Whitehead, Preston.

Best grinding mill or crusher for feeding purposes, £2, Richmond and Chandler, Salford, Manchester.

Best chaff cutter (horse, steam, or hand power), £2, William Langford Fisher, Mere Side Iron Works, Trapstone, Yorkshire.

Best turnip cutter, £2, Richmond and Chandler, Salford, Manchester.

Best churn for hand or power, £2, Whitworth and Eastwood, Albert Works, Blackburn.

Best haymaking machine, £2, Thomas Townley Parker, Astley Hall, Chorley.

Best hay-rake, £2, John Whitehead, Preston.

The annual dinner took place on the Thursday evening, in the Corn Exchange; Lord Stanley, M.P., the President, in the chair. Among those present were Sir J. Kay Shuttleworth, Mr. James Heywood, M.P., Colonel Wilson Patten, M.P., Sir J. G. Hesketh, Colonel Towneley, &c.

The usual preliminary toasts having been disposed of,

The CHAIRMAN rose, amidst loud cheering, to propose "Prosperity to the Royal North Lancashire Agricultural Society." After giving a short summary of the proceedings and prospects of the society, financial and otherwise, his lordship said—I am glad to hear, from the testimony not of one, but of several of those who have witnessed it, that our show this year, in point both of quantity and of quality of articles exhibited, very far exceeded any which has taken place until now (Hear, hear). It has been peculiarly satisfactory, I am told, as regards horses and cattle. That is a gratifying state of things; but there is one other feature in our meeting of this year, to which I advert with much greater satisfaction than to anything connected with the show: I am glad to see a larger attendance and a more numerous subscription on the part of tenant farmers than we have had for some time past (applause). Last year, when holding a similar office in regard to another agricultural association within this county, I was compelled to notice the comparative absence of that class of members, though that appeared the only sign unfavourable to the prosperity of that body. Now, I believe there are no men who work harder than our Lancashire tenant-farmers (cheers). There is no set of men who hold a more independent or a more creditable position; and if they will only add—and that they will do—an increasing knowledge of the theory of agriculture to that practical knowledge which they already possess, I see no reason why they should not compete, and compete successfully, with the largest occupiers of land in England. But of this I am quite sure, that no association of this kind can or will prosper unless it be supported by the tenant-farmers in the first instance. No such association can or will prosper, or answer the ends for which it is established, if it be supported exclusively, or mainly, by the landlords (Hear, hear). From the affairs of this body I pass on to a larger and a wider inquiry. And first, what are the requirements of agriculture in this district; and, secondly, what are those requirements in England generally? On the first point, you will perhaps excuse me if I do not go into detail. I am not a practical farmer: my work is of a very different kind; and I have not the presumption to offer advice or comment to those who are far more capable of instructing me. But only one thing I will observe. I do not think that, taking this county throughout: great as is the progress which we have made of late years, our agriculture is quite so far advanced as, perhaps, we have a right to expect that it should be, judging by the enterprise, the ingenuity, and the capital which are expended in other branches of business. There are two defects which almost any casual passenger may note—the one comparatively imperfect draining, and the other the smallness of the fields. Now, as to small fields, I say nothing about that, because they may arise from small holdings, and in that case of course their existence is inevitable (Hear, hear). But as to drainage, that is equally a benefit to the small holder as to the large holder; our soil requires it; we have markets close at hand to take off our produce; it is no new experiment; it is well known and proved to pay, and, above all, it is a matter, more than perhaps any other, in which landlord and tenant can mutually help one another (cheers). There is a good deal of truth in an answer that one farmer made to another. The first said, "Aye, it is very well for you to make improvements; you can afford an outlay, you can afford to run risks and to incur losses; but I can't." "Well," said his friend, "that is very odd, because, for my part, I have tried both ways of farming, and I find that I can't afford to farm badly." Now, I don't think there is much doubt, as between the two, which was right (cheers). Well, gentlemen, looking at the general condition of agriculture in this country, it is impossible not to see that within the last few years a new era has begun. I made last year a short statement on that subject, showing the need and the room for agricultural improvement, which I think I may repeat here. That statement was to this effect—that of (in round numbers) 77,000,000 acres in the United Kingdom, three-fifths are already in cultivation, bad or good, as the case may be; one-fifth is not cultivable by its nature; and the other fifth might be cultivated, but is not. That shows you the possible extension of area within the limits of these islands. But it is not so much from the opening of new soil as from making the most and the best of that which is already opened (Hear) that we have our return to expect. I have spoken of draining as it affects this county, and I would extend what I said to all England; and I venture confidently to affirm, that what has been done throughout the country in the way of draining is as yet a mere trifle to what wants doing. I have seen various calculations on the subject. They don't precisely agree—estimates seldom do—but they nearly all agree in this, that there is room in the item of drainage alone for the profitable investment within the United Kingdom of £100,000,000 sterling. Now, that seems a large sum; but if you recollect that statisticians have computed the yearly savings of our people—the yearly addition to the national capital—at £50,000,000; and if you recollect how, within the last 20 years, a sum of nearly £300,000,000 has been invested in railways, that investment leaving, on the whole, the country not poorer but richer than it found it (Hear, hear); if you recollect these two facts, I think neither you nor I need trouble ourselves much with asking where the money is to come from. But, after all, draining is not the only possible branch of improvement; there are two others, the one manure and the other machinery. Now, as to manure, we have a great problem to solve. It is very well, no doubt, and it pays just now to bring it from the ends of the earth, to send for it from out-of-the-way islands in the Pacific or elsewhere; but that is a resource on which you cannot calculate for ever (Hear, hear). That supply may be, probably must be, exhausted one day; and then, though perhaps not till then, we shall be driven to the resource to which we ought to have applied long ago, I mean the saving of that natural manure which we waste (applause). I saw it stated the other day, on good authority, that we are paying every year—the British farmer is paying every year—a million and a-half for artificial manures. Now, I don't say that that is money wasted; I don't believe it is, and I have no doubt the investment is profitable; but a great deal of that might be saved if people would only remember that in nature nothing is destroyed, that there is no such thing as destruction; that what comes from the earth returns to it again, and that all that is necessary is to restore to the soil that which originally comes from the soil, and that which we throw away in the shape of the sewage of our great towns (Hear, hear). I know that there are great difficulties in the way; that there is a difficulty in deoderizing that soil, and in rendering it not offensive; and that there is a difficulty also in concentrating it, at least the solid part of it, into so small a bulk as to bear and reward the expense of transport. I don't deny the existence of these obstacles; I only say that, serious as they are, science has surmounted obstacles far greater. I have heard a calculation, made by competent persons, that what we waste in the sewage of the Thames-valley alone, that what we waste in polluting and poisoning the Thames, comes, in point of fact, to several millions a-year—£5,000,000 is the sum named, every year. I cannot pretend to give you any estimate on that subject, but I believe this—that if the obstacles I have spoken of are once overcome, I will say rather when they are overcome, and when it becomes as much the regular practice to save those natural manures as it is now the practice to waste them, you will save a sum which will equal, probably, from one-half to two-thirds of the taxation of the country. Now, understand me, I am not saying that it is for landlords or for farmers in this matter to take the first step. They cannot lead, they must be content to follow; they must wait until chemical science has made that easy which at present is difficult, if not impossible. I name the circumstance only as showing that, satisfactory as agricultural prospects may be now, there is reason to think that they may be more so in a few years to come (Hear, hear). The other branch of agricultural improvement of which I have to speak is machinery. I know nothing more striking than the advances which have been made in this direction during the last 15 years. In the thrashing machine, the sowing machine, the reaping machine, and other implements—even in the ploughs that we now use—you have a sample of what has been effected already, and a foretaste of what will be accomplished hereafter. I say a "foretaste" only, because, looking at the Patent Office Returns of this year, I see that since 1850 no less than 35 patents have been taken out for an invention of one kind only—for the application of steam to ploughing (Hear, hear). I look, too, into the very valuable report by Mr. Evelyn Denison, on the Paris Exhibition, and see there that one firm—Clayton and Shuttleworth, of Lincoln—have sold, since 1852, 1,390 steam engines for agricultural purposes, with an aggregate horse-power of nearly 9,000. I look, again, to the report of the last provincial meeting of the Royal Agricultural Society of England, held this year in Essex; and there I am told that no less than 147 firms exhibited implements, and that the show of implements was the largest that had ever been known. These again, I think, are signs of progress in another direction; but here, as in the case of manure, I admit that, in general, the farmer has a fair right to say it is not he who is called upon to try experiments. It is, however, in this case very much the landlord's business; and I know of no way in which a man of large fortune, and with a disposition to render that fortune available for the public benefit, can better employ it than by large and liberal investments in all such machinery as appears likely to promise success (Hear, hear). Now, gentlemen, with your permission, there is a subject on which I should like to say a single word, although, perhaps, it may not be in favour with all here. I mean that of which you have heard a good deal—that question which, perhaps, you have heard in some degree misrepresented—that of agricultural statistics. There is a notion in many persons' minds that either the Government or the landlord, or some other party, is anxious to obtain from the farmer information, as regards his private concerns, which there is no fair reason that he should be called upon to give (Hear, hear). Now, my answer to that is simply this—there is no other class of men, there is no other occupation throughout this country, with which the State does not already interfere in an equal degree, to ascertain what it is doing. Every pound of cotton that comes into this country, every bale of goods that goes out of it; the age, the occupation, the employment of every one present in this room, and every one throughout this empire, are minutely registered and recorded for the public benefit. Now, I don't stand up—I never shall stand up—for any mode of asking for returns that shall be minute, vexatious, or inquisitorial (applause); but I do think that the farmer himself will gain—and that he is really the party interested in the first instance—by knowing a little more about the state of the market. As the matter stands, he buys and sells almost in the dark. He does not know, with any certainty—he takes it from the dealer—the market value of what he sells. He does not know what amount of stores there may be in the hands of other persons; he does not know what are the real wants of the buyer; he is in the hands of the dealer; and, notwithstanding the superior information which the dealers can obtain, and the large expense to which many go in endeavouring to obtain it, even their information is defective, and they are, I believe, very frequently misled. It is really a case of the blind leading the blind, and I only wonder they don't tumble much oftener into the ditch. But while I think that some form of agricultural returns is desirable, I cordially agreed, when the matter was discussed in the House of Commons, with those who say that such returns should be as simple and as little troublesome as possible. (Hear, hear.) Now, one word about what I may call agricultural education. I think some of us are apt to forget—the time passes on and events move so rapidly—that agriculture within the last few years has almost risen to the rank of a science. I don't undervalue that kind of knowledge which comes by actual practice; on the contrary, I believe it is the most important, and the most indispensable of all. Without it theory is worth very little; but still there is a theory as well as a practice of farming, and the latter will not be the worse for a little intermixture with the former. Now, I was the other day in the west of England, and I was there very much pleased with the information I obtained about the agricultural college which they have lately set up at Cirencester. It contains 60 or 70 resident pupils to be educated, and 700 acres of land are managed by the college; on it the theory may be tested, and there the practice of farming is carried on. Any farmer's son, or any landlord's son either, may there obtain a sound and good agricultural teaching at a price of not more than £40 yearly. That college is not only self-supporting, not only pays its own expenses, but is gradually paying off a debt incurred by the cost of construction. And I think half-a dozen such colleges scattered over England, in different parts, would give to the practice of agriculture, in its higher branches, a stimulus and an encouragement of which the effects would be felt, not only in this generation, but in the next. I say throughout England, but I might say a great deal more, for I learn that at the Cirencester College of which I speak, a considerable proportion of the inmates are either sons of colonists, or persons intending to settle in the colonies, who are anxious, before they go to a remoter region, to carry with them a knowledge of the latest improvements that have taken place here. (Hear, hear.) Now, we have in this county as much capital, as dense a population, as much ingenuity, and as much enterprise as exist anywhere in England; and I was glad to see, in the report of this society last year, that your chairman on that occasion recommended the establishment of such an institution in Lancashire. I don't know that my opinion is worth much, but I give it for what it may be worth, and I do most cordially support that recommendation. (Hear, hear.) It now only remains for me to repeat the sentiment with which I began, and to wish success to this association. We are not working alone. There are in the United Kingdom nearly 400 societies of this kind, small and great, besides 115 farmers' clubs. Success, I say, to each and all of them; and let us all remember that, in promoting the progress of agricultural improvement, we are not merely developing the national resources, we are not merely lightening the national burdens, we are not merely adding to the strength and power of England, or increasing the wealth of those who are wealthy already, but we are indirectly engaged in one of the highest and noblest tasks which human enterprise can propose to itself—we are engaged in relieving the sufferings and in elevating the condition of the labouring classes of this country (cheers). And I dwell on that, because I confess that it is a consideration which gives this whole subject of agricultural progress an interest, to my mind, which otherwise it would not possess. The higher the farming becomes, the more machinery you employ, the less need there will be for mere brute labour, and the more you will require skilful cultivated intelligence. You will then have less demand upon your labourers' muscles, and a larger demand upon their brains (cheers). And now let me ask you to drink, with three times three, "Prosperity to the Royal North Lancashire Agricultural Association" (loud cheers).

The toast was drunk with great enthusiasm.

Mr. W. J. Garnett briefly responded.

Sir J. Kay Shuttleworth then proposed "The Successful Competitors." He said it was impossible to attend meetings of this kind, and to witness, as those present had done this day, the various kinds of industry which were brought to bear upon the progress of agriculture in this country—in the mechanical arts, in the preparation of manures, and in the breeding of stock—without feeling that a great and successful effort was in progress to meet the new circumstances in which the agriculture of Great Britain was placed. It was impossible to forget, and he thought it would be a great injustice to the tenant-farmers of this country if we did forget, that very recently they had been exposed very suddenly to universal competition; and that sudden exposure to competition had occurred at a time likely to try the energies of the whole country. What had been the peculiar circumstances in which the agriculture of England had been exposed to the competition of the world? We knew what steam had done within this country itself to equalize its markets. We knew that the corn of Lincolnshire and of the west was brought with the greatest possible rapidity and the utmost cheapness to the markets of the manufacturing districts. But we also knew that the corn which was grown upon the virgin soil of the forests of America, and the unexhausted treasures of the inexhaustible soil of Hungary, and the produce of the alluvial deposits of the Boug, the Dnieper, and the perpetually renewed alluvial soil of the Nile —all this was likewise brought to the markets of England, to compete with our own produce. Instead of being disheartened, however, with the position in which they had been placed, neither the proprietors nor the tenant-farmers of England had given way in any respect to despair. They had put forth manly and vigorous efforts, and, while the science of agriculture had probably made a greater advance in the last 15 or 20 years than it had done in many centuries previous, he gave expression to his earnest conviction when he said that—speaking either of the proprietors or the tenant-farmers—no class of the community had put forth more energetic exertions than the agricultural class during the last ten years. (Hear, hear) Those exertions were, he thought, in the way to be successful. It was impossible to enter a show-yard like that which had been open that day, even under the very unfavourable circumstances as to weather, without seeing what improvements had been effected. He was not present at the trial of reaping machines on the previous day, but he had been informed of its successful result, and it was opportune now to consider for a moment what was the importance of success in that invention. A fortnight ago he was in the Vale of Evesham and in Gloucestershire with one of the ablest agriculturists of that district, Mr. Holland of Dulverton, who was patron of the college at Cirencester to which Lord Stanley had adverted. That gentleman himself farmed 1,000 acres, and his experience concerning his own crops was "over ripe," and he said he would put 50 reapers into the fields the following morning. He remarked that the corn was turning into bran under the husk, and a very large quantity, if the wind came, would be given out, and that he (Sir J. K. Shuttleworth) believed had since then been really the case with the greater part of the Vale of Evesham and the Vale of Gloucester. He had heard it estimated that, in consequence of the sudden storm which had burst over the country, we had lost a million of money. Now, the remedy against such calamities was most obviously to be found in mechanical inventions. These reaping machines would, in the first place, supply that lack of labour which in the improved circumstances of Ireland, and in the very great employment of the labourers of the country upon railways and in manufactures, the farmers were now experiencing. He was very glad to see, from recent reports, that in some parts of Ireland labourers were getting 3s. 6d. a-day—an unparalleled circumstance in that country; and throughout England there was the greatest difficulty in getting harvest hands. It was impossible, therefore, that crops could be effectively reaped without the aid of these machines. (Hear). And recurring to the subject of competition, it would be observed that the French were now, under the guidance of their Emperor, who had witnessed the progress of inventions, of mechanical science, and of chemical science in relation to agriculture in England, taking their first steps in the application of mechanical inventions to husbandry, and also in the improvement of breeds of stock, and in the application of chemical science to agriculture in France. They were competitors with the British farmers to a very great extent, though they had not been so much so, as the virgin soils had competed with this country. What a contrast was there, however, between the condition of France, as respects mechanical inventions, and that of this country! About nine years ago he travelled through the whole of France in the beginning of the month of July. He passed through the heart of the country, from the Pyrenees, by Toulouse, up to Paris, and thence to England; and he then observed that the operations of reaping the crops in France were of a most primitive description. He perceived in every field that the crop was thrashed on a floor which was made for the purpose upon the soft ground; and instead of being winnowed by any machines, the corn was thrown into the air by wooden shovels, and exposed to the action of the wind, which at that season sweeps across France towards the Pyrenees. And, not to speak of such implements as clod-crushers, and others that were so well known here, all the means of cultivation, and of getting in the harvests in France, such as carts even, were in the rudest condition. The carts were there made almost impromptu, by a couple of trees being cut down for the purpose, and roughly set upon wheels. Such a thing as an English cart was not to be seen from one end of France to the other; consequently, the means of conveying the harvests from the fields to the nearest towns were wanting. But we must not argue from the present state of agriculture in France as to its future condition. The French were as enterprising a nation as we ourselves were; and he had no doubt that in a short time a considerable number of machines, the best of the English manufacture, would be introduced into France. And it was impossible not to foresee new struggles for the agriculture of this country, by the introduction from the whole of the East of Europe, and from Southern Russia, of vast supplies of corn, which the very success of our arms would bring into our market (Hear, hear). Passing from the reaping machines exhibited yesterday, and entering the show-field of to-day, the next almost mechanical invention which offered itself to consideration was one which was intimately connected also with chymical science, by which alone we could hope for the further progress of agriculture. He alluded to the drainage of the soil. He considered that the whole of the various means for the drainage of the soil of England were as beautiful a contribution of science to the agriculture of this country as any other gift that science had made. The machines for the manufacture of pipetiles, the introduction of the pipetile itself, and all the means which the department of mechanics had furnished for the complete pulverization of the soil, and which were absolutely essential as the first step in the improvement of agriculture, were all parts of the contribution of the inventive arts and of science. But he believed that sufficient stress was not being laid by the most observant of chymists, and even the most practical of agriculturists, upon the importance of the deep pulverization of the soil. Liebig stated, as did all the more recent chymists, that this was the main source of improvement in the soil; and by it they explained all the old modes of agricultural improvement, as also almost all modern means, except such as were of a purely chemical character. The deep pulverization of the soil was attended by this consequence: chymists had discovered that when the surface of bodies was exceedingly extended by a minute comminution of their particles—a piece of beech wood, for example, could be reduced to a state of charcoal, and a square inch of surface had in it that of 100 square inches of surface in the condition of charcoal—the square inch of beech wood would absorb gases in its substance to 80 times its volume, of muriatic gas for instance; and there was another substance which could absorb 800 times its volume—sponge platina. The effect of this was to absorb and intensify the action of the atmosphere upon the soil. Here was science to confirm the daily experience of agriculture—that a minute and deep pulverization of the soil had the most important effect upon its character. It explained the whole system of fallows, the whole system of the rotation of crops; for in this way the whole action of the atmosphere upon the soil was so deeply intensified that soils which were made fallow altered their chymical character. And the rotation of crops was but a different kind of fallow, for a crop was put in which did not exhaust the soil instead of those which had exhausted it; and in this way, by the action of the air—which, after all, was the great pabulum of plants—upon the soil were obtained those mineral constituents which had become deficient. He desired to justify, by these remarks, the extreme importance of science in explanation even of the experience of agriculture. Happily the two never contradicted each other: the experience of ages was simply interpreted by philosophy. So it was with drainage. Mechanical inventions which assisted drainage, and the deep pulverization of soil in comminuting its particles into the minutest atoms—all these came to confirm the experience of time past in reference to alluvial deposits. Whenever there was a district which local experience had shown to be naturally and deeply rich in soil, gaining from the atmosphere much agricultural wealth, a soil naturally pulverable, it would be found to arise there from the deposit of leaves of the forest, or the deposit of light mud from the river, or from the lake, or something like our great morasses, which was a great reservoir not merely for vegetable constituents. but also a great reservoir for the constituents of the atmosphere, which had been able to act upon that soil for ages. Turning now to the department of machines, he was very glad to hear from the secretary that the reaping machine which had gained the prize on the previous day, being the original invention of a machinist, had been greatly improved by a tenant-farmer, Mr. Birch, one of the tenants on Lord Sefton's estate, a gentleman, he understood, of great intelligence and great skill in his department. He thought he perceived, throughout the whole of the progress of agriculture, that the inventions of the machinists had constantly to pass through the practical mind of the tenant farmer, and they thus constantly received some new impulse and increment of benefit from the operation (Hear, hear). He thought there had been great progress made by the efforts of the tenant-farmers and proprietors of this country, under the difficult circumstances in which they were placed by the change in our legislation some time ago. Allusion had been made to the great number of portable steam-engines in use. It was impossible to enter such a county as Norfolk or Lincoln, and see the great contrast which it presented to continental agriculture, without at once perceiving the vast strides that this country has made in the application of mechanical inventions in the progress of agriculture. All the farms in Norfolk exhibited chimneys, and so they did in Lincolnshire. He remembered being told by Lord Yarborough that there was a period in Lincolnshire when all that sandy portion of the upper part of the county which was now one waving field of corn was nothing but a waste—a rabbit warren, and that there was erected at one end of it, nearest to Lincoln, a very high tower, as a beacon to the traveller to guide him across this waste at night, and also in the day-time, for there were scarcely any roads upon it. All that tract of country was now a great triumph of English Agriculture. And he remembered also being told by Mr. Coke, of Norfolk, that when Madame de Staël had visited his uncle at Holkham, she related to her friends that she had found two rabbits there quarrelling for two blades of grass. But now, from Holkham to Lynn, and Holkham to Norwich, that district was one wide waving corn-field. That very circumstance of the sandy character of the soil, which afforded one of the greatest obstructions to agriculture, had been one of the great causes of success of late years (Hear, hear). He was very much concerned to observe, respecting one of the most excellent friends of agriculture, the late Mr. Pusey—and it was a sore point with chemists that he, who was so great an authority, and especially with the tenant-farmers, should have said so—that he said chemistry had made no contribution to English agriculture, except the application of sulphuric acid to dissolve the phosphate of lime in bone; and Sir Robert Kames's application of the water derived from flax manufacture as manure. If he (Sir J. K. Shuttleworth) wanted to illustrate the enterprise of agriculture in this country, he would chose no other point than this—the confidence with which chemists had taught that guano was an important means of increasing the fertility of the soil, and providing food for plants, the enterprise which had been put forth in this direction in consequence, and the number of ships that had been freighted to bring guano from the uttermost end of the earth. He believed it was the fact that within the last three years, according to the report of Mr. Evelyn Denison, 1,000,000 acres had been drained in this country, and about £5,000,000 expended in the operation; but it was also stated, and he thought the computation quite within the mark, that the tenant-farmers of England had expended in that same period no less than £5,000,000 on guano alone (Hear, hear). That was a direct contribution from chemistry to the agriculture of this country (applause). Before concluding, he desired to express the pleasure with which he had heard that there had been a great improvement manifested in the show of to-day in the stock exhibited by the tenant-farmers; and he was very glad to see that, notwithstanding the circumstance of the high quality of Mr. Towneley's stock, so many tenant-farmers had obtained prizes on this occasion (loud cheers).

The toast was responded to by Colonel Towneley, and a succession of complimentary toasts concluded the proceedings.

STEAM CULTURE,

AS EXEMPLIFIED AT THE CHELMSFORD MEETING.

HOWARD AND BAKER'S STEAM PLOUGH.

This is an arrangement of four turn-wrest ploughs, each attached by means of a rope and drum on a common spindle, to a travelling windlass. It is but very recently invented, and not yet reduced to practice in some of its minor details. Under such circumstances, we shall confine our observations to the principle of the arrangement, rather than to its peculiar mechanism, as exhibited at Chelmsford. It is intended for being hauled by rope traction, but may also be so by a traction engine.

The grand objects apparently sought to be accomplished are these: *first*, a separate and independent action for each plough; *second*, means for entering the ploughs regularly into the ground, and taking them out again on their arrival at the opposite headland; *third*, means for letting each plough loose should it come in contact with a stone, rock, tree root, or other obstruction capable of breaking it; *fourth*, means for turning at the headland; and *fifth*, the best construction of an implement for one-way ploughing.

1. It takes no great knowledge of practical mechanics or experience in the field to be satisfied that a series of ploughs rigidly fixed in a frame, and that frame as rigidly fixed on four wheels, can never prove successful in the steam culture of a large class of soils. There may be exceptional cases, where a partial success may be obtained with such a combination, at a sacrifice of power and quality of work done; but where the soil contains large stones, flints, is lying in small curved ridges, is unlevel in every respect, and, in short, is devoid of that evenness of surface which rigidly fixed ploughs, resting on a series of points in a regular plane, demand, good work is impossible. No argument is required in proof of this; for where the surface of the ground is undulating, the ploughshares ought always to move parallel to such a surface.

2. When a series of ploughs work together, the second must be in the rear of the first, the third of the second, and so on; and therefore in order that they may enter the soil regularly, as they ought, each must have a separate and independent vertical action. When ploughing with horses, it is usual to draw a furrow along the ends of the ridges, to guide the ingress and egress of the plough; and when several teams follow each other in ploughing, each plough on coming to this furrow is entered at the one end of the ridge and taken out at the other. Just so must it be in ploughing with steam, tackle the steam-horse in hauling a series of ploughs as you may; for although the motor force crosses this furrow at once, that is no reason why the ploughs should also enter at once too, the one a regular distance behind the other—the foremost, for example, at this furrow, and the last or hindmost half-way across the headland: but the contrary, for each plough ought to enter at this furrow, and this can only be done by its having a separate vertical motion.

Again, when any of the wheels of the plough-carriage run in the furrow, as in Fowler's examples, it must also have a vertical action by means of a lever, in order immediately to raise it the depth of the furrow when it comes to the headlands, so as to allow the ploughs to remain at the proper depth until they also reach the headland. In the case of the horse plough, when the furrow-wheel reaches the headland the ploughman immediately acts upon the handles of the implement in order to keep it to its proper depth the short distance it has to go; and a similar movement takes place on entering it again into the soil. With these every practical farmer is familar; and were his ploughman to neglect his duty in this respect at the headland, the result of such negligence would soon appear, and as soon be pointed out to him, and also the necessary means to effect a remedy. But with a series of ploughs rigidly fixed to a series of wheels with their peripheries in one plane, such a result cannot be obtained; and therefore the necessary provision ought to be made in the construction of the implement to effect it.

3. Our third proposition is to provide against accident to the implement when at work. If the ploughshare, for example, comes in contact with a ledge of rock, something must give way. This has occurred to many inventors; hence the various contrivances adopted to avoid the catastrophe. Stacy and Vallance, for instance, detached the implement from the traction-rope by means of the clutch-clip action of the pincers which laid hold of it; Fisken, by the reverse motion of the implement; and so forth. No doubt, in practice, the proper plan is to trench the soil to the proper depth, so that no such obstructions shall come in the way of the ploughshare. This, of course, must be granted; but until such improvements are made as here contemplated, something ought to be done to save the implement.

4. Our next, is to turn the implement at the headland. This, inventors have always found a difficult problem artificially to solve. The horse is made to perform the task in turning by drawing the plough the breadth of a furrow along the headland every time; and when the ploughman fails to make his team describe the proper curve, the alternative is left him of shifting the plough this distance along the headland himself. But it is no such an easy matter tutoring the mechanical genius of steam to perform the headland-evolutions at issue; while the task is still more Herculean to shift a series of ploughs by manual labour. Mr. Fowler, we have seen, adopts the latter; while the Messrs. Howard and Baker, and Mr. Smith, of Woolstone, aim at the

former. That the latter are pursuing the proper course is evident; and we have no doubt they will ultimately triumph over all the difficulties in the way.

5. Our last is one-way ploughing. This is almost universally acknowledged to be a grand desideratum in steam-culture. No doubt, so long as large areas of land are imperfectly drained by means of underground drains, narrow-curved ridges and open furrows on the old system must of necessity be had recourse to for the removal of rain water; and, therefore, until the steam-draining plough has had time successfully to accomplish its work such a course must be followed. But when the land is once properly drained, open furrows should be avoided; hence the soundness of our proposition.

In complying with the respective demands of each of those propositions, the following arrangements are adopted in the project before us. 1st. Four ploughs are attached by means of four wire ropes to a travelling-compound-windlass—each plough having a rope and windlass of its own, and being held by a ploughman in the same manner as when drawn by horses, so that they individually have a separate and independent vertical and horizontal action. 2ndly. On arriving at the headland the travelling windlass becomes stationary as soon as the foremost plough gets sufficiently far beyond the end of the ridge to admit of the other three being drawn upon the headland. This done, the first ploughman turns his plough to the right or left as the case may be, when the hauling-rope, by means of a drum and intermediate gearing, actuates the drums around which the traction-ropes of the *second*, *third*, and *fourth* ploughs pass—hauling them forward; and as the *second* plough is drawn up close to the first upon the headland, its windlass or drum is then thrown out of gearing by means of a clutch like that of the first, when the *third* and *fourth* are brought forward in a similar manner. 3rdly. In being hauled along the field, each of the traction drums can be instantly thrown out of gearing should its plough come in contact with any obstruction likely to endanger it, allowing the traction-rope to be uncoiled, so as to allow the ploughs to remain stationary. 4thly. When all the ploughs are drawn upon the headland, a signal is then given by means of a flag to stop the engine. The anchors are now shifted the breadth of four furrows forward along the headland, the travelling windlass again fixed to the hauling-rope, and the motion of the stationary windlass reversed. In doing this, the hauling-rope turns the travelling windlass round the breadth of itself across the headland by means of drums and castor steerage-wheels in front. When away, it travels to the opposite headland with the ploughs again after it—the traction drums being thrown into gearing as the ploughs enter the ground at the proper distance between them. And, 5thly, a very simple and ingenious turnwrest plough has been invented by Mr. J. Howard for ploughing one way.

Such will convey to our readers a general idea of this project. As yet it has hardly attained to that degree of maturity which would justify farther criticism; but much has yet to be done in the improvement of details before the fundamental principles at issue are fairly reduced to practice, as the inventors themselves are perfectly aware of. There is no firm in whose hands such can be more safely left than in those of the Messrs. J. and F. Howard, of Bedford, from their familiarity with all the minutiæ of detail necessary to success in the field—they having long occupied so highly important a place in this department of the implement-yard of the Royal Agricultural Society.

HANNAM'S STEAM PLOUGH.

Henry J. Hannam, Esq., of Burcot Park, near Abingdon, Berks, must obviously be acknowledged "the Father of Steam Culture," he having, in 1849 and 1850, successfully ploughed about 50 acres of land by means of steam, on the stationary windlass principle, as now adopted by Smith and Fowler. No doubt land had been cultivated prior to this by means of steam—under Heathcoat's patent, dated 1832; MacRae's, 1839 (British Guiana); Atzlar's (American), 1843; by Mr. Atkins, of Oxford, &c. But the first was only adapted for mossy lands; the second for the low-lying lands of Guiana, situated between canals and rivers; while the others have proved failures. Mr. Hannam's steam plough, on the contrary, is adapted for any kind of soil, and will bear a fair comparison with any of those which lately entered the field at Chelmsford, in competition for the £500 prize of the Royal Agricultural Society, if it does not supersede them in many respects.

The origin and history of Mr. Hannam's project become thus interesting topics. In 1848 he laid before the Messrs. Barrett, Exall, and Andrewes, of Reading, the first ideas of a plan somewhat different from the one in question; but on entering into arrangements with that firm for reducing these to practice, they were modified to their present form. Accordingly, a ledger account was opened, working plans drawn, and the work rapidly proceeded with and finished, the implement and tackle being in 1849 delivered at Burcot Park in working order. A glance, however, at Mr. Hannam's folio (which we were permitted to examine, as also the working plans) proves that the manufacturers had several alterations and additions to make before they finally concluded their task, during which they ploughed about eight acres of land on their own farm (Whiteley Farm) in experiments. At first there were no carriage-wheels (E, see diagram) in front for regulating the catenary action of the traction rope. In ploughing with horses, they haul nearly at a given angle, although traversing an undulating surface, while the weight of the whippletrees and traces is also nearly the same, so that the force applied to the beam may also be said to be uniform and in a given line. But the force of a traction-rope from a stationary windlass, acting over a convex surface, is very different from what it is over a concave one, hence the origin of the wheels in front. In short, for some time every fresh experiment taught another lesson, demanding principally some addition to the minor details of the project. But after a vast amount of unwearied labour, and no little enpense, jointly borne by the manufacturers and inventor, the construction of the steam-plough was, comparatively speaking, brought to a satisfactory conclusion—and the implement yoked on Burcot Park farm.

The following diagram represents a drawing of this steam-plough as worked at Whiteley Farm by the manufacturers during the experiments already mentioned. The several parts are: (1) A, a portable steam-engine; (2) B, a windlass with horizontal drums; (3) D D D D, four snatch-blocks; (4) G G, wire-rope for hauling the implement; (5) F F, anchors, with their stays, *d d*, and (6) C, the implement itself, with front-carriages, E E*; the boundary-line, H H, showing the fence of the field.

The engine (A), a common portable one of nine-

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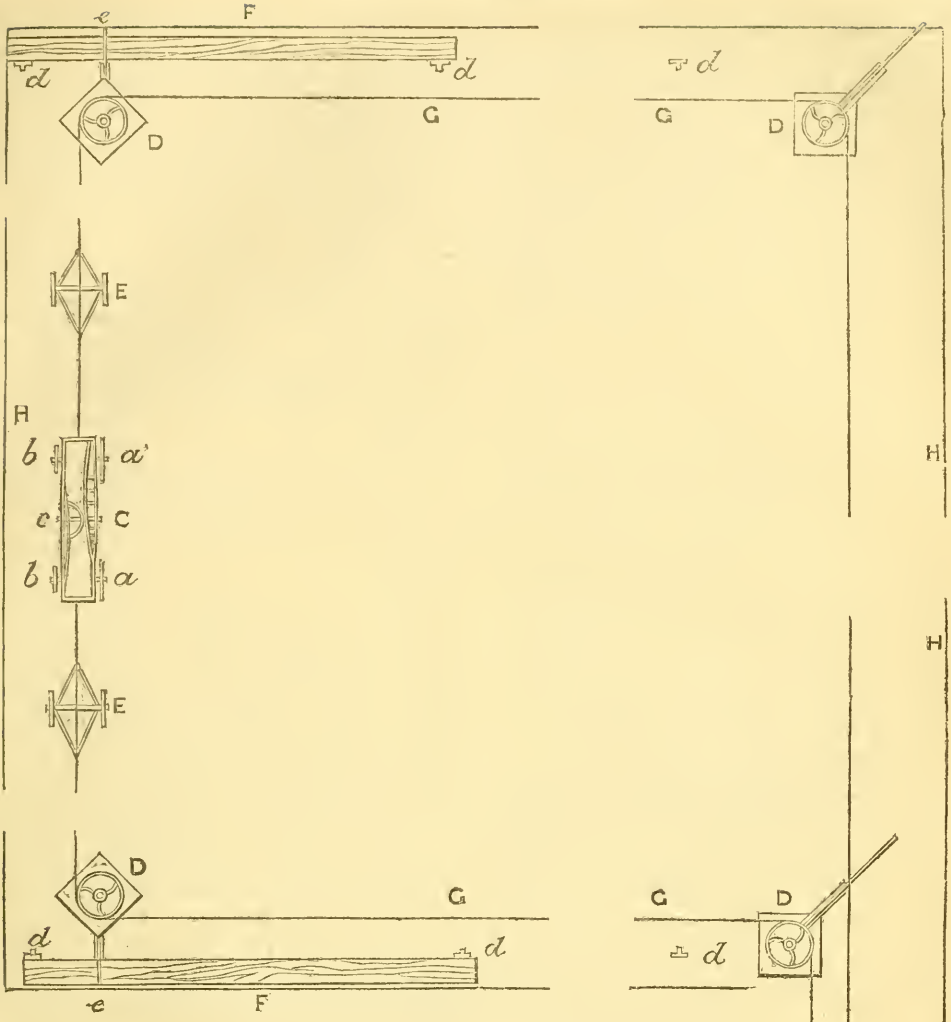
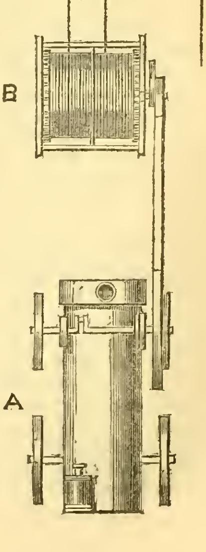
* The draughtsman has placed the carriages, E E, too far from the implement; they should have been close to it.





horse power, requires no description. It was placed outside opposite the gate at a corner of the field cultivated.

Between the engine and the gate the windlass, B, was fixed. It consists of two horizontal drums on a common axle, the one for winding and the other unwinding the rope—reverse-gearing and the necessary framing on wheels to support the whole, and remove it from place to place. In principle there is no novelty about it, the windlasses of Heathcoat and several earlier patentees being similar, as are also those of Fowler's draining-plough, and Smith's steam-plough, subsequently adopted.

The snatchblocks or pulleys over which the wire rope passes are also similar to those used by Mr. Fowler, and are placed in exactly similar positions to what has been adopted by Mr. Smith, of Woolstone, Bucks, on the plan of culture pursued by him, as will be seen from a glance at the diagram.

About 1,600 yards of wire rope, weighing 10 cwt. 3 qrs. and 17 lbs., was used. This size of a rope was obviously too small, and must have stretched unequally in passing over the pulleys during severe strains occasioned by any obstruction coming in the way of the plough; and to this, no doubt, may be traced the cause why it did not work well, and soon became useless altogether, as subsequently noticed. At the commencement, as seen in the diagram, it passes round the entire boundary of the field; but as the implement nears the side where the engine is placed, less rope is required, and hence less traction force. Some 40 friction rollers were used along the line of the rope to keep it from cutting the ground.

The mode of anchorage possesses novelty with merit. In the experiments in question, *d d* were moveable posts, temporarily sunk in the ground, about 20 feet apart, along both headlands; but in many cases these may be made of stone or cast-iron, and permanently fixed, so that one row would serve the two adjoining fields. A beam (F) at each end of the field stretches between two of those posts. Along the back or outside of these beams the hooks of the two opposite pulleys next the plough slide as the land is ploughed, and when the length of the beam is finished it is shifted on to the next space between two posts. To facilitate this shifting of the beam, and the sliding of the hook of the pulley along it, a spare one at each headland may be used; so that the hook can be moved from the one to the other without almost any more stoppage in shifting them than in working the pulley along one.

The implement (c) is a one-way, two-furrow, Lowcock plough, with wheels for regulating the depth of the furrow in the common way.

In another drawing of an implement shown us, the second furrow is made by a turnwrest Lowcock plough, having two beams and two wheels, *a a'*, one at the end of each beam. In the body of this plough a pivot or axle *c* is fixed, on which two beams hinge or work, each beam carrying a first furrow plough, the one for ploughing up-land and the other down-land, and two wheels, *b b'* for regulating the depth of the furrow; so that while the one beam and plough is at work, the other is elevated above ground. Or this order may be reversed, the first furrow being made by the Lowcock plough, and the other by the alternate hinge-beam plough. Any number of beam ploughs may be added on this latter arrangement, a small wheel or roller supporting the common axle on which they turn. In front of the implement two wheels, E, were used for regulating the force of traction, as already stated, and two behind for using when moving in the opposite direction.

As a two-furrow plough the latter implement has considerable merit; but with more than two furrows we fear it would be unwieldy to manage at the headlands, unless some lever contrivance were adopted for elevating the Lowcock plough above the ground; and even with a two-furrow plough something of this kind would be advantageous. But improvements of this kind are easily effected. What most concerns the mechanical world at present is a sound foundation to build upon; and here we have two important principles; (1), that of the turnwrest plough; and (2), of two alternate separate beam-ploughs turning on a common central axis; and we may add for a third, a combination of the two. The former has been adopted by Howard; the latter was so by McRae, and has since been so by Fisken and Fowler. Both have merit, and time has yet to tell which experience will pronounce the best.

The principle of anchorage, again, is also deserving of special notice, as it can be reduced to practice in various ways. Stones, for example, may be sunk, as already stated. These may serve as blocks for the posts of wire fences, the plank being fixed in the near side of the fence by means of hooks laying hold of the stones. The plank again may be placed in the ditch; or, where no ditches exist, a small one may be made for the purpose, or even a good deep plough-furrow will present a sufficient resistance to the beam. Where stone dykes abound, holes at intervals near the bottom may be made, in which grappling hooks for holding the beams may be fixed. These, and various other plans, may be adopted as circumstances suggest.

Mr. Hannam used one of Clayton and Shuttleworth's portable engines of nine-horse power. He found that in fields of from ten to twenty chains long, the friction of the rope pulleys and windlass consumed half this power—that the draught of two Lowcock-ploughs in a frame was too great for his spare power; consequently he removed one of the ploughs, working with only one. The draught of this one plough he still found to be equal to that of four horses in his soil, ploughing to the depth of six inches. To obviate this he designed a new reverse plough—and laid the design before the Messrs. Barrett, Exall, and Andrewes; but the rope having become useless, its construction was deferred, and the whole affair from this and other circumstances allowed to fall to the ground—an issue much to be regretted, as the project has at least equal merit with any of its successors.

We glean several important lessons from Mr. Hannam's experience. "I performed," he says for example, "upwards of fifty acres at an expense I reckoned of about 15s. an acre. This was while employing but one plough. Had I used a double one of ordinary draught, which *I might easily have done with the same power*, the cost would have been but 7s. 6d. Other reductions I contemplated in manual attendance would further have reduced it" (the cost per acre).

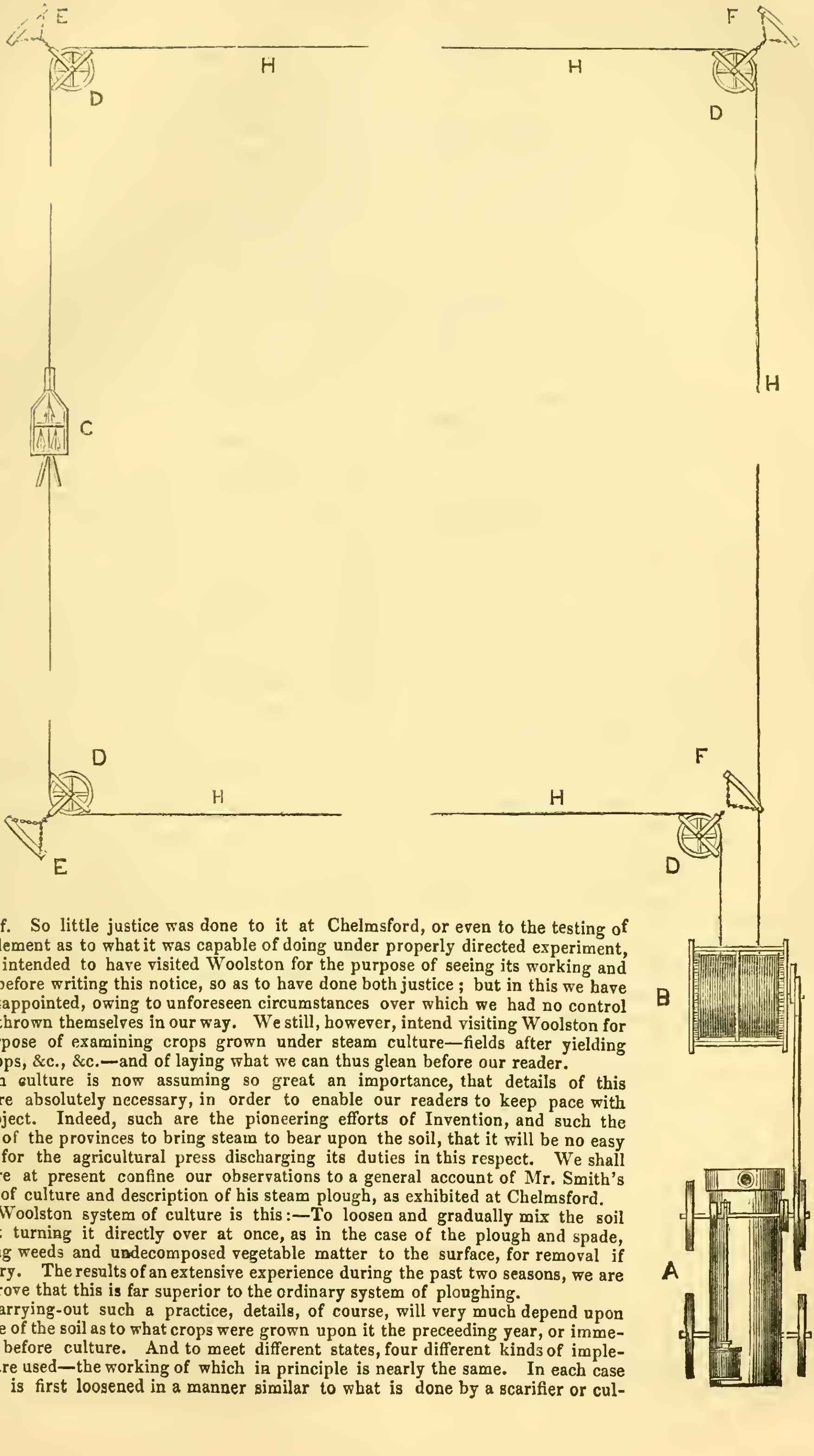
Again, he ploughed one field of fifteen acres ten inches deep for potatoes, the length of which was seventeen chains.

In another case he ploughed a field upwards of a quarter of a mile in length; but here, he says, "I found my engine at fault to an extent which I could not make out at the time, but have since considered it to be owing to the length of rope, this being rather beyond the maximum length of field the engine was capable of ploughing successfully."

Such is a very cursory glance at this the first successful attempt at steam-culture. Altogether about 60 acres were cultivated, a breadth which must be acknowledged a favourable beginning. It will be seen, however, that Mr. Hannam did not consider his project matured. This is candid, auguring well, and setting a laudable example to others, who are claiming comparative perfection before they have even got to his attainments, and therefore we hope he will again enter the field, and not allow others to reap what he has sown. We trust the Messrs. Barrett, Exall, and Andrewes will at once set about the manufacture of his reverse D P plough, and that he himself will get a proper-sized rope and work it, and in this he will doubtless have the cordial support of the landowners and farmers of Oxfordshire (not Berkshire, as we stated on a previous occasion), who have much reason to congratulate themselves in being able to lay claim to the "Father of Steam-culture" as one of their number. Hitherto they may have overlooked their interest and duty in this respect; but a century hence, and there is not a province in the kingdom which will not pay its homage to Burcot Park for the steam-plough, thanking the Messrs. Barrett, Exall, and Andrewes for what they have done in the affair.

SMITH'S STEAM PLOUGH.

Mr. Smith, of Woolston, Bucks, deserves great praise, as a practical farmer, for the spirited, enterprizing, and exemplary manner in which he has embraced steam culture; and although not the father of the system, as we at one time expected it would have been our pleasant duty to have designated him on this occasion, he is nevertheless the second in the order of time, and the first as to the area of land cultivated—he having used steam-power over one hundred acres of land this season with so much success as to secure the continuation of the practice for the future. The mode of culture he has adopted is a peculiar one; and the above conclusion is saying a great deal for its beginning; but not more than it merits, nor what the farmers of Buckinghamshire have reason to be



proud of. So little justice was done to it at Chelmsford, or even to the testing of his implement as to what it was capable of doing under properly directed experiment, that we intended to have visited Woolston for the purpose of seeing its working and results before writing this notice, so as to have done both justice; but in this we have been disappointed, owing to unforeseen circumstances over which we had no control having thrown themselves in our way. We still, however, intend visiting Woolston for the purpose of examining crops grown under steam culture—fields after yielding such crops, &c., &c.—and of laying what we can thus glean before our reader.

Steam culture is now assuming so great an importance, that details of this kind are absolutely necessary, in order to enable our readers to keep pace with the subject. Indeed, such are the pioneering efforts of Invention, and such the anxiety of the provinces to bring steam to bear upon the soil, that it will be no easy matter for the agricultural press discharging its duties in this respect. We shall therefore at present confine our observations to a general account of Mr. Smith's system of culture and description of his steam plough, as exhibited at Chelmsford.

The Woolston system of culture is this:—To loosen and gradually mix the soil without turning it directly over at once, as in the case of the plough and spade, throwing weeds and undecomposed vegetable matter to the surface, for removal if necessary. The results of an extensive experience during the past two seasons, we are told, prove that this is far superior to the ordinary system of ploughing.

In carrying-out such a practice, details, of course, will very much depend upon the state of the soil as to what crops were grown upon it the preceeding year, or immediately before culture. And to meet different states, four different kinds of implements are used—the working of which in principle is nearly the same. In each case the soil is first loosened in a manner similar to what is done by a scarifier or cultivator. In point of fact, implement No. 4 is his own (Smith's) "Patent Cultivator." The subsequent processes may be cross scarifying, clod-crushing, rotary digging by means of small claw-wheels, harrowing, &c., according to the nature of the soil, the crops to be grown, or the season of the year.

"The objects sought" under this system, in the words of Mr. Smith himself, "are, at a great reduction of cost, to produce a much greater depth of staple than the common plough can attain; to keep the seeds and weeds near the surface, that they may speedily shoot and be destroyed; and yearly to renovate and re-enrich the exhausted energies of the soil, by mixing it with such portions of the subsoil as may be requisite to supply any deficiency."

His steam plough is on the stationary windlass plan, as will be seen from the diagram representing it at work in a rectangular field. It consists of the following parts, viz.:—A the engine, B the windlass, C the implement, D D D D snatchblocks, E E and F F anchors, and H the rope.

The engine is one of seven-horse power, manufactured by the Messrs. Ransomes, of Ipswich, of the common kind used for thrashing, and therefore requires no further notice. It works the windlass by means of an endless rope from a rigger on the crank-shaft.

The windlass consists of two horizontal drums, on a common axis; reverse gearing; rigger for the driving-rope; and the necessary framing. At Chelmsford, it was placed outside the area of land to be cultivated, and between it and the engine, the site being at one corner; but it may be placed in the corner of the field, or any way along the headland, at a gateway. Various implements were tried, as (1) a "patent steam cultivator," for trenching and subsoiling land. This consists of a combination of shares, subsoilers, and claw-wheels, so arranged as to leave the soil in small trenches or ridglets of about three furrows in breadth, in a pulverized state. In the centre, a trench or double mould-board plough turns up the soil, throwing the one half to the one side, and the other half to the other; next, subsoilers follow, loosening the bottom; and on the top, two claw-wheels rotate, one on each side, breaking and pulverising the soil turned up by the plough. By removing the claw-wheels and shares, and inserting an additional subsoiler, a cultivator for flat work is formed, termed No. 2. (2) The second implement tried was a scarifier, or "patent cultivator;" (3) two common ploughs; and (4) two of Howard's one-way ploughs.

These experiments were made partly on the light land, and partly on the heavy, the third and fourth being only in the latter field.

The snatchblocks were manufactured by Mr. Fowler, and are similar to what he uses himself.

The anchors are of two kinds—moveable and fixed. The former (E E) are of a triangular form, with four strong grappling-tines in one side—that opposite the angle to which the snatchblock is fixed. The latter (F F) are expanding X anchors, in a pit. Shallow ruts, about the depth of a plough-furrow, require to be dug at each headland, for the grappling-tines of the moveable ones.

One end of the wire rope (H H), at the commencement, stretches from one of the drums of the windlass (B) entirely round the field or area of land to be cultivated, passing over the snatchblocks at the corners, and is then fixed to the other drum. When starting, there requires to be coiled round one of them a length of this rope equal to the length of the field, for the purpose of paying it off to the implement; so that the whole length required has to be the length of the land longer than the circumference of the largest field upon the farm which the engine is capable of cultivating at one time. Along the line of the rope, moveable friction-rollers are placed at short intervals. These we have not thought it necessary to show upon the diagram.

In working the implement, it is hauled alternately from headland to headland, or from E to E (No. 1), loosening about 32 inches each time. On arriving at the headland, the ploughman, by means of a very ingenious patent lever elevator and steerage, raises, or rather makes the implement raise itself out of the ground, and place itself in a proper position for turning. A signal, by means of a flag, is then given to the man at the engine to "stop her." This done, the snatchblock and anchor are shifted 32 inches forward at each end, and another signal given to the engineer to reverse the motion, when the tightening of the rope slackened by the advance forward turns the implement, without any manual assistance; when away it is then hauled to the opposite headland, and so on alternately, E and E approaching nearer and nearer to F F as the cultivating proceeds. In ploughing the headlands and finishing the field, the rope is again placed around it, and the implement attached to the rope along the two headlands, thus cultivating first the one and then the other.

Such is a condensed notice of Mr. Smith's system of culture, and steam plough. Since he first started, considerable improvements have been made on the implement; and, on leaving Chelmsford, he told us he was going home to construct new implements for the culture of soils different from his own, and also a plough for those who may prefer ploughing to his own mode of culture. We were also glad to learn that he had entered into arrangements with the two large firms of Hornsby (Grantham) and Howard (Bedford), as manufacturers, for carrying out his project—the former for the engine part, and the latter for the tillages; so that farmers are likely to gain the full advantage of some important combinations of several new patents with old ones expired and about to expire.

COMPARATIVE MERITS OF THE DIFFERENT SYSTEMS.

The steam ploughs tried at Chelmsford are not a twelfth part of those under patent, while a large number of old patents have already expired, saying nothing of projects never patented, such as Mr. Hannam's. In reviewing the former, therefore, we must not overlook the merits of the latter; and in such a wide field of conspiring efforts to bring steam successfully to bear upon the soil, it will be no easy matter extending impartiality to all within the limited space at our disposal. The ear is familiar with the saying, "There is nothing new under the sun"; and in comparing the details of steam culture at Chelmsford with those of prior inventions, the truth of the adage is as applicable as ever, for certainly there were there but few parts entitled to the claim of *discovery*. There is, however, often no less merit in the perfecting of details, in their reduction to practice, and in the successful combination of parts, than in the discovery of the originals themselves; and this is that view of the subject to which our observations will be found principally to belong, progress being mainly confined to combination of parts and improvements in details.

Preserving the same order as formerly, the different parts of Boydell's traction engine to which we will have to direct attention as possessing merit are, (1), the endless railway; (2), the application of the motor force to the top of the wheel; (3), the direct traction of tillage implements and waggons; (4), the method of tillage proposed by Mr. Coleman; and, (5), that proposed by Mr. Boydell himself and others.

The endless railway is now nearly a century old, Edgeworth's patent dating 1770. All that Mr. Boydell, therefore, can claim are improvements in detail; and perhaps the best exponent of the value of these is the fact that they have cost him a fortune (£10,000) in bringing them to their present state of perfection. The merits of the endless railway may be briefly summed up in one word—the *foundation of steam culture*—for in a very short time no portable engine will be without it.

There is, likewise, no novelty in the application of the motor force to the top of the wheel, it being there applied in Upton's patent (1837). There is also nothing new in the statement made by Mr. Boydell, that by the pinion gearing in the top of the wheel double power is gained; *i.e.*, the traction force is double the motor force, supposing the force applied to move the engine itself *nil;* or, supposing a given force to move the engine, then the traction force is double the balance; for this has been known in mechanical science from time immemorial. Why Mr. Boydell should have experienced so much unmerited opposition here, is not very easily accounted for, since the facts of the case at issue are palpable to every one who has made himself familiar with the movements of a cart-wheel. One common error into which his opponents have fallen is by taking moments round the axle! But it is certainly high time that they should know more about "the mathematics of a cart-wheel" than this (?); for if they would examine the upper part of the axle, they would find that the axle-box does not press upon it, and hence that it cannot be the fulcrum, for the ground on which the wheel rolls is the fulcrum. Another error is by supposing that resultant forces are greater with the pinion gearing at the top of the wheel than they would be with it gearing anywhere else; whereas the contrary would be true granting that resultant forces existed, which is not the case, the two pistons balancing each other by means of opposite cranks on the crank-shaft. And if they would further bring their own assertions—that the traction force would be as great with the motor force applied anywhere else as at the bottom of the wheel or on a level with the axis—to the test of experiment, and also resultant forces, they would then find out how far they were astray. And until they do make some such experiments as these, we must remind them that the experimental science of modern times denies them the liberty of making such assertions in their absence; for "Practice with Science" is now our motto.

The saving of space which the motor force gains by translation is, however, a proposition the soundness of which we readily grant requires to be established by a more extensive and accurate course of experiments than has yet been made, before it can be admitted as a rule into Received Science. But the experiments, so far as gone, are in its favour—a result which ought to silence the opposition which Mr. Boydell is now receiving from his opponents until more satisfactory ones are made proving the contrary, if possible.

The facts of the case at issue (supposing the expansive force of steam not affected by translation) are these:—The motor force moves at a velocity equal to that of the traction force, the spaces travelled over being also equal; while the end of the lever (one of the second kind) to which the motor force is applied travels at double the velocity of the motor force, the space travelled over being also double.

Now such being the facts of the case, we should like to hear how Mr. Boydell's opponents are to reconcile them with established science; for if they themselves are right, then the motor force ought to move at double the velocity of the traction force, which is contrary to fact. Until experiment, therefore, finally settle the question, we presume there is no alternative but to leave his opponents upon the horns of this dilemma.

Our next topic is culture and cartage by direct traction, or harnessing steam directly to the plough and cart. This plan has been embraced by numerous patents throughout the history of steam culture, and still finds many warm supporters. Every labourer is familiar with the advantages of standing near his work, and experience must be left to settle the question as to whether steam is to be an exception to this rule or no. Boydell's traction engine was the only example shown at Chelmsford; and no opportunity was there afforded it of trying its *merits*, so as to solve this proposition. And even if an opportunity had, we are far from concluding that it was capable of doing justice to the system it represented, owing to the motor force being only applied to one wheel. At the same time, it showed a traction force capable of doing the work as economically as any of its opponents by indirect or rope traction, if not more so —a conclusion borne out by the experiments now being made at Hounslow on a large scale.

The force required to propel a heavy engine over fields, the compression of the soil by its weight, and the tear and wear upon the engine itself, have been advanced as objections to direct traction. But to the former of these, the obvious answer is that experiment must be left to settle the question as to whether more steam is required to propel the engine than to work a stationary windlass and ropes; and as to the consolidation of the soil, we have never been able to say that any serious harm was done, while all who have examined the soil unanimously admit that less harm was done by the endless rails than by horses' feet. At the out-castings on Boydell's own system of ploughing, one wheel has, no doubt, to travel on the ploughed land, and the effect produced here we have not yet had an opportunity of examining; but we do not anticipate it will be so injurious as that from horses' feet, where such is tolerated, or that it will amount to a practical objection, as we shall show when discussing this system. And with regard to tear and wear, that is one of comparison between the endless railway and rope, which must also be solved by experiment. But granting that an endless railway should only last for a season, and that wheels will require to be furnished yearly, that is only a good reason why the patentee's charges, and the price of the endless railway itself, should be less. *An article so simple in mechanism should not cost much.* (We throw out this friendly hint to the patentee and his manufacturers, in the hope that they will make the proper use of it.) Moreover, the patentee's charges have nothing to do with the expense of tear and wear in such an investigation as this, for at the expiry of the term of his patent they fall to the ground.

Our two last propositions regarding tillage may briefly be disposed of in one sentence, as both are inferior to the one-way system of ploughing practised by McRae, Hannam, Fisher, Fowler, &c. At the same time, lands not thoroughly drained may be more advantangeously ploughed in ridges than on the flat; and to obviate the trampling of the wheel, Mr. Boydell proposes a drag-harrow behind it, for loosening the soil where such is required. Moreover, on the Lois Weedon system of culture, subsequently noticed, one-way ploughs will not possess that advantage over those now generally in use which they do on the old system. Of the three remaining examples, we have already said that the details of one of them, Howard's, were not in a sufficiently matured state for farther criticism; and, therefore, we shall not discuss its comparative merits at present: so that there only remains for investigation Smith's and

Fowler's, which may not unaptly be termed a second and third edition of Hannam's.

Mr. Fowler's project is a combination of parts of unexpired patents, of old patents expired, of inventions not patented, and of the necessary means for putting them together. Apart from the rather liberal use thus made with the inventions of others—inventions which in all likelihood he knew nothing of when adopting them—the project has considerable merit; and with the adoption of a few more patented and unpatented inventions, as Boydell's railway, it may be greatly improved. It is liable, however, to be superseded by combinations founded on sounder principles, as the sequel will show.

The rope-traction projects with which this one and Smith's have to contend in the field of discovery, are Major Pratt's (1810), McRae's (1839), Etzlar's (1841), Osborne's (1846), and Hannam's (1848), not patented; besides improvements of the above, as Lord Willoughby de Eresby's, Fisken's, Williams', &c. Pratt puts his engine up the middle of the field, cultivating on either side using a horizontal windlass. McRae draws his engine along one headland, using an endless rope similar to what Lord Willoughby de Eresby has since adopted. Etzlar's is a travelling windlass, like Fisken's. Osborne uses two engines, one at each headland, and two implements alternately worked by the engines. On each engine is a windlass with two vertical drums, and in going up land the rope is paid off out of the wake of the implement, as adopted by Williams and Fowler.

There is thus a wide field for investigation open before us—more so than we can enter upon at present. We must, therefore, confine our remarks to what Fowler and Smith have copied from their predecessors; not, be it observed, for the purpose of condemnation, but to do justice to inventors generally, by showing how the facts of the case stand, in the progress of steam culture, so as to enable our readers to make new improvements and combinations, returning "tribute to whom tribute is due" at the same time. While in previous articles we endeavoured to do ample justice to both, we must not forget a bounden duty we owe to others—the removal of unmerited monopoly out of the way of progress.

Neither of the projects, therefore, before us has any great claim to novelty. What little they have may be valuable, but it does not stand in the way of new combinations and improvements. With the exception of the implement and anchors, Smith's is a complete copy of Hannam's. The vertical drums of Fowler's windlass, the manner he pays out his rope, and two wheels supporting a long beam for raising his implements, are copied from, if not included in, Osborne's patent. His anchors are Worby's, his trench ploughs Cotgreave's, a principal part of the implement is claimed by Smith, and the general principle of tackling and working Hannam's; so that the balance—all that he can claim—does not amount to very much beyond combination.

Again, the construction of Fowler's implement is faulty in principle. To say that it is capable of superseding the plough in its present shape is to say what is not true, for the plough can begin and finish a field successfully, and that is what it cannot do. No doubt improvements can be made; but as any implement-maker may effect these, justice to them, and impartiality in general, demand that we delay the investigation of them for the present, for it will be high time to discuss their merits when once they exist.

Further, there cannot be a doubt that successful steam culture involves a more extended practice of the Lois Weedon system than is perhaps generally contemplated. Now we aver that a very small field-acquaintance with steam will show that Osborne's plan will be the best adapted for this, for four men will work two of his engines and two implements with only the length of the field of stretched rope in use for each engine, no snatch-blocks or anchors being required. With less than half the number of hands, and half the amount of tackle, Mr. Osborne can thus do three or four times as much work as Mr. Fowler or Mr. Smith. In point of fact, Mr. Fowler cannot plough on the Lois Weedon system at all—probably the most valid objection to his implement being capable of superseding the plough or entitled to the £500 prize of the Royal Agricultural Society; for if the Lois Weedon system of culture is the best, it would be short-sighted policy on the part of the Council to award any implement the prize, which could not comply with its demands. No doubt Mr. Fowler can adopt Hannam's arrangements of snatch-blocks, as we formerly mentioned; but then he has to do so before he can gain the prize; and after he has done so, it is Hannan who merits the prize—not he. In this respect Mr. Smith is in a similar position with Mr. Fowler, Mr. Hannan superseding both; while on the Lois Weedon system, Mr. Osborne would take the prize from the three.

It may, no doubt, be said that Osborne's steam plough is not so well adapted for the ordinary system of culture as the Lois Weedon; but if the latter is the best, this can be no valid objection. It is a common belief that steam culture involves an entire revolution, not only in the character of implements, but also in the system of culture itself; so that it is more than probable that the finger of progress is thus pointing to the Lois Weedon practice as that which is ultimately to become general under steam.

Mr. Smith's system of culture we propose investigating in a subsequent article, after having examined its merits at Woolston; and therefore we shall pass over it at present with the simple remark that the comparative merits of his implement cannot be valued apart from it; for to overlook the importance of the latter is to pronounce a premature award on the former. Indeed, new systems of culture adapted for steam may even prove of more importance to the county than the implements they require. We hope, also, to be able practically to investigate the Lois-Weedon system, in order to criticise more fully its adaptation to steam; and also, in another separate article, our present system of culture, which we shall show is far from being suited for steam, and that the steam ploughs exhibited at Chelmsford were just as badly adapted for it. Take Mr. Fowler's, or Smith's, or Howard's, or Coleman's, or Williams', &c., &c., for example, and we ask any farmer if, with either of them, he could supersede his present ploughs—*i. e.*, do without ploughs and horses? Nothing could be more absurd than such a proposition.

With regard to the £500 prize, one word will suffice, after what we have said in the last paragraph; for an implement can never supersede, or be an economical substitute for the plough, which does not enable the farmer to do without his plough and his plough teams. This is the practical manner of solving the question at issue; and if the judges and Council of the Royal Agricultural Society are practical men, guided by the golden maxim of "Practice with Science," let them take it home to themselves, and prove it by experiment, as all questions in physical science are proved. It is all very well for self-interested parties—with one eye on the manufacture of implements and the other on the £500—to talk of superseding the horse and plough by degrees; but once allow the sharp, keen edge of such a wedge to be entered, and where will not the steam hammer of the present age drive it, with all its superincumbent load? for if a part is entitled to a prize, will not each exhibition come in for a share? The conclusion is obvious.

From these observations, it is manifest that the public mind, in judging of the comparative merits of steam ploughs, must not overlook those of our different systems of culture, as progress in the one promises to keep pace with progress in the other. At Chelmsford, too much attention appeared to be paid to the quality of the work done, and too little to the character of the implement which performed it, and its adaptation to the demands of progress; for a few years hence, and the experiments there made will, in all probability, be inapplicable to the general and most improved systems then in practice. Consequently, what will be their value? If the Lois Weedon system, or Smith's system, or a combination of the two, becomes general, what will be the value of the experiments made with Fowler's plough, or even of the plough itself, with hundreds of Osborne's and Smith's combined implements in the field? The endless railway will, no doubt, remain a solid foundation for Osborne's or any other system, as we formerly said, and also the motor force be continued to be applied to the top of the wheel, but certainly not to the top of one wheel only, as done by Mr. Boydell, as that involves a combination of adverse forces to produce traction force in the line of direction; for such adverse forces are contrary to sound doctrine. Boydell's merits are the improvements he has made on the endless railway, and its applicability to the wheels of portable engines, thus exemplifying the principle of direct traction both for culture and cartage. It affords us much pleasure to inform our readers that very high-pressure traction engines are being now constructed with the motor force applied to the top of both wheels, and with other important improvements, calculated to do justice to direct traction.

We cannot close this review without expressing a regret that Fisken's and Williams' ploughs did not appear in the field, as both of them possess points of considerable merit. Another implement (Kyle's) is entered in the catalogue, but for it we cannot say quite so much. B.

ON THE DIVERSITY OF THE MEASURES IN USE FOR THE SALE OF CORN IN THE UNITED KINGDOM.

By J. T. Danson, Esq.

In 1834 a select committee was appointed by the House of Commons "to inquire into the present practices of selling corn throughout the United Kingdom, with a view to the better regulation thereof:" and this committee, after examining many very able and well-informed persons on the subject, reported that there existed in different parts of the country a great diversity of practice as to the measures by which corn was sold: that measures of capacity alone were in use in some places, measures of weight only in other places, and that in many districts measures of a mixed character were in use; that great inconveniences resulted from this diversity; that it was a constant source of misunderstanding and dispute; that it tended to check the intercourse of persons in one market with those in another, afforded facilities for fraud, and rendered the quotations of price in the public prints unintelligible in many localities, and to a great extent useless.

Since that committee sat, twenty-two years have elapsed; and the diversity referred to has not, in any sensible degree, been diminished. But railways have reduced to one-half, or to one-third, the effective distance between the different corn-markets of the kingdom; and the electric telegraph has brought them all within speaking distance of each other. The transactions between different parts of the kingdom are, in proportion, more numerous and extensive; and whatever tends to impede, or to render more costly, or more troublesome the intercourse thus established is clearly a deduction from the benefits these changes are adapted to confer on the community.

Free trade in corn equalizes the price of corn; and an equal price throughout the kingdom is, practically, the lowest price that can be attained. More or less, it is the business of every person engaged, however remotely, in the corn-trade, to promote the attainment of this uniform and lowest practicable price, by promoting the transfer of corn from the localities in which it is cheap to those in which it is dear, till such uniformity be established. And the gain or profit accruing from such transactions is directly dependent upon the extent of the change thus effected—for that, in fact, measures the "margin of profit." It is also, though in a less degree, determined (adversely) by the difficulty of effecting the desired transfer, whether that difficulty be considered with reference to the labour of discovering local inequalities of price, by the labour of negotiating a transfer, or by the cost of transmitting the required quantity of corn. Either form of difficulty will affect not only the ultimate price to the consumer, but the number and extent of the transactions which, as being burdened by such cost, are practicable, within a given difference of price.

When a corn-factor receives a dozen circulars from as many different corn-markets, using different measures, the first process to be performed is an equalisation of the measures, and the prices attached to them. They cannot be compared till they have been referred to a common standard; indeed, the process is much the same as it would be were the measures the same and the money different. This being part of the needful labour of his business, must be paid for by those who employ him in it: and it is hardly necessary to add, that his ultimate employer is the consumer of the corn. But the consumer is not the only sufferer. Whatever increases the cost of any operation, also diminishes the extent to which that operation is likely to be performed. And—as all who are engaged in the corn-trade, and who are familiar with the difference to them between a brisk and a dull market, will bear witness—to diminish the number or the extent of the operations performed is to take from the gains of those employed to perform them. Hence I hold that not only all who consume, but also all who deal in corn, are interested in these diversities: have an interest in their abolition, and have no real interest whatever in retaining them.

Let us see what are the principal diversities at present. To travel over the entire field would occupy much more time than I have here at my disposal: nor is it necessary to the end in view. If those existing between the principal markets could be got rid of, the rest would present no practical difficulty.

In *London* wheat is sold by the quarter of eight imperial bushels: barley, oats, beans, and peas are sold by the same measure, and so is Indian corn occasionally, though a common measure for that grain is the weight of 480 lbs., or 8 bushels, each weighing 60 lbs.

At *Gloucester*, where, as in London, the trade is partly in home and partly in foreign corn, wheat of home-produce is sold by the imperial bushel, and of foreign produce by the bushel of 60 lbs. weight. Barley for malting is sold by the imperial bushel, but for grinding by the bushel of 50 lbs.; oats by the imperial bushel; beans by the same measure, unless of foreign growth, and then by the bushel of 65 lbs.; peas by the imperial bushel, and Indian corn by the bushel of 60 lbs.

At *Birmingham* wheat is sold by the bushel of 62 lbs.; barley, if for malting, by the imperial bushel, and, if for grinding, by the bushel of 49 lbs.; oats by the imperial bushel, unless Irish, and then generally by the bushel of 39 lbs.; beans per 196 lbs.; peas for boiling by imperial measure, but for grinding per 196 lbs.; Indian corn per 196 lbs.

At *Liverpool* wheat is sold by the bushel of 70 lbs. and oats by that of 45 lbs.; barley, for malting, by the imperial quarter, and for grinding per 60 lbs.; beans, British, per 504 lbs., and Irish and foreign per 480 lbs.; Indian corn per 480 lbs., and Indian meal per 196 lbs.

At *Leeds* wheat is sold by the bushel of 60 lbs.; barley, if of home-growth, occasionally by the imperial bushel, otherwise by the bushel of 56 lbs., but if foreign always by imperial measure, and if for grinding, per 52½ lbs.; oats by the stone of 14 lbs.; beans and peas per 504 lbs. (the bushel of 63 lbs.)

At *Wakefield* the measures seem to be the same as at Leeds, excepting that barley is always sold by the imperial bushel.

At *Hull* wheat and barley are sold by the imperial bushel; oats per 24 stones; and beans, peas, and Indian corn by imperial measure.

And at *Newcastle-upon-Tyne* wheat is sold by the bushel of 63 lbs.; barley, for malting, by imperial measure, and for grinding per 56 lbs.; oats, British, by imperial measure, and foreign by the bushel of 40 lbs.; peas, for boiling, by imperial measure, and for feeding per 64 lbs.

These particulars are all gathered from corn-circulars of current dates, taken from the files of one or two of the principal corn-factors at Liverpool. It will be observed that they all relate to English markets in which foreign corn appears, in quantities more or less considerable. Let us now turn to the English markets in which corn is more exclusively of home-growth.

At *Stowmarket* wheat for the home trade is sold by the imperial bushel, but for export by the bushel of 62 lbs.; at *Wisbech* by the imperial bushel; at *Norwich* by the imperial bushel, but with a weight per bushel (usually 62 to 63 lbs.) specified; at *Great Yarmouth* by the bushel of 62 lbs.; at *Nottingham* by a weight of 36 stones, which, the stone being 14 lbs., is equivalent to 8 bushels of 63 lbs. each; and at *Boston* by the imperial bushel, with the particular weight per bushel specified. The diversity is quite as great as to the other descriptions of corn.

In the Irish markets corn is almost invariably sold by a measure of weight. The measure of capacity is scarcely known. At *Belfast* there is complete uniformity: only one measure is in use for wheat, barley, oats, beans, peas, and Indian corn: it is the hundred-weight of 112 lbs. But at *Londonderry* they have three measures in use—the barrel of 20 stones, or 280 lbs., for wheat, the stone of 14 lbs. for barley and oats, and the ton of 2,400 lbs. for Indian corn. Here the wheat measure is a multiple of that used for barley and oats; but the ton for Indian corn is 160 lbs. more than the ordinary ton of twenty hundredweights, or 2,240 lbs.

At *Dublin*, wheat, barley, and oats are all sold by the barrel; but a barrel of wheat has 20 stones, a barrel of barley 16 stones, and of oats 14 stones: Indian corn is sold by the wheat-barrel of 20 stones. *Waterford* and *Cork* have the same measures as Dublin, excepting that at Cork wheat appears to be sold sometimes by the imperial bushel and sometimes by the barrel.

In *Scotland*, too, the measure of weight prevails; but there is considerable diversity between the measures of different markets. At *Glasgow* wheat is sold per 240 lbs., barley per 320 lbs., oats per 264 lbs., beans per 260 lbs., and peas and Indian corn per 280 lbs. At *Dundee* all corn seems to be sold by the bushel, but the bushel is a measure of weight, in which wheat weighs 62 lbs., barley 54 lbs., oats 40 lbs., and beans and peas 62 lbs. At *Kirkcaldy* the quotations are, for wheat, barley, and oats, simply "per quarter."

It is now obvious, that the first step towards uniformity opens the question whether the uniform measure shall be one of capacity or one of weight?

The committee of 1834 recommended the enforcement by law of the use of the imperial bushel; but added a proviso, that the weight per bushel should, in each case, also be stated. This recommendation of the imperial measure of capacity may be traced, in part, to a temporary cause. As I shall have occasion, presently, to show, the Legislature was at that time in the heat of a struggle to enforce the observance of the Imperial Measure Act of 1824; also the committee were evidently impressed with the idea that it would give an additional value to the returns of the inspectors charged to ascertain weekly (for the levying of the sliding-scale of import duties on corn) the average price of corn in England, if the average weight per bushel, as well as the price, of the corn sold in each locality were stated; and that all quotations of price, as they would probably soon come to be made in the same manner, would thus acquire a new value. Something must also be attributed to the influence of the trade in London, and to the assumed difficulty of altering the system of metage so long in use by the corporation there. The committee recommended that all contracts should be required to be made on this basis, and that a latitude of half-a-pound per bushel on the stipulated weight should be allowed, as between buyer and seller, on wheat, and a quarter of a pound on barley and oats. Shipments from Irish ports were still to be permitted to be made by weight, but only on condition that the weight per bushel was specified.

Nothing was done upon this report, unless we assume that it had some influence on the Legislature of the ensuing session as to weights and measures in general. But, before adverting to this, and to the present state of the law on the subject, it may be as well to revert to the first movement, made some years previously, for a reform of our entire metrical system.

The first act (5 Geo. IV., c. 74) was passed in June 1824; this was partially amended by 6 Geo. IV., c. 12, and came into operation 1st January, 1826. It abolished the old wine-gallon, beer-gallon, and corn-gallon. The new gallon was determined by reference to the standard yard and pound in the custody of the Clerk of the House of Commons. That pound was of Troy weight, and contained 5,760 grains. The pound avoirdupois was fixed at 7,000 of such grains. And a measure which would contain ten pounds avoirdupois of distilled water, at the temperature of 62 deg. Fahrenheit, the barometer being at 30 inches, was to be deemed an imperial gallon; and eight of such gallons were to make an imperial bushel. These acts were amended by the 4th and 5th Wm. IV., c. 49 (passed in August, 1834), which abolished heaped measures, and all local and customary weights and measures, and declared that all articles, excepting precious metals, gems, and drugs, should be sold, retail, by avoirdupois weight only. This Act was repealed by 5 and 6 Wm. IV., c. 63 (passed in Sept., 1835), and a penalty not exceeding 40s. was imposed on the use of any local or customary measure, with a re-enactment of most of its other provisions.

Undoubtedly much has been effected under these Acts. The hundred-weight has been fixed almost universally at 112 pounds, and the stone at 14 pounds; and only one pound or gallon is now in general use. But much yet remains to be done. Nor was this unexpected. The French, with many additional advantages, and a much earlier start, have not even yet, achieved entire uniformity in this respect. They began their reform in 1788, and introduced the decimal system in 1793; and to this day the old measures remain in use in some localities, and the old names are still retained, though applied to the new measures, in many more localities. But it will be observed that the evils attending the diversity of measures used in the corn-trade are in no degree traceable to any defect in the standard. The local measures are all, or nearly all, now readily reducible to the imperial standard. The *coomb* of Suffolk and Norfolk is four imperial bushels. The Norfolk *last* is ten imperial quarters. The *load* is, in some places, five imperial quarters, and in others five imperial bushels. In short, the evils in view arise rather from the use of different multiples of the same units—the pound and the bushel—and the use of measures of capacity as well as measures of weight, in the same trade, than from the defects aimed at in 1824—35.

The practical effects of this diversity of corn measures have been well described by a Committee of the Wirral Agricultural Society:—

> "1. That in almost all cases in which a seller or buyer of agricultural produce has occasion to resort to more than one market, he is compelled to deal with more than one mode of ascertaining the quantity sold. And that, while such differences answer no good purpose whatever, they check the freedom of commercial intercourse, afford facilities for the commission of fraud, often cause mistakes and disputes, and always involve trouble and loss of time.
>
> "2. That the quotations by which producers, dealers, and the public, seek to inform themselves of the variations of price of the same commodity at the same time in different parts of the kingdom (in order to their equalization by the legitimate action of trade), are deprived of a great part of their proper utility, in consequence of the weights or measures quoted for each locality being very commonly unintelligible in most others.
>
> "3. That the inconveniences thus arising are increased precisely in proportion as the commercial intercourse of each locality with every other in the kingdom is promoted, by the improvement of road and postal communication; and, hence, are now much greater than they were when reported on by the Parliamentary Committee of 1834, and are growing greater year by year."

The remedy is less easy of discovery. To appeal to the Legislature alone were idle. What can be done by Act of Parliament has been done already. It remains for the public, by whom, and on whose behalf, this diversity of measures is used, to recognise its absurdity and count its cost, and resolve on its abolition. Local dealers are the conservatives in this matter. With them the inconvenience of the present system is at a minimum; and that of a change would, at first, be considerable. But merely local dealers are fast becoming a small minority. Distances are now so diminished that every market in the kingdom is gnettig into communication with every other. And as this process goes on, the burden of the present system grows heavier, step by step. How long it will be borne is yet doubtful.

That it would be for the benefit of all parties, without exception, to put a stop to it, is certain. What is wanted is agreement amongst the sufferers upon a point which after all is of little consequence: that is to say, what measure shall be uniformly adopted. Practice is indisputably in favour of a measure of weight, and there are many reasons in favour of its universal adoption; but here the aid of Parliament would be required. The import duties and, for connected reasons, the freight on foreign corn, are fixed by measure; and the average prices, as collected by the corn inspectors and published in the *Gazette*, are also taken by measure.

Some leases are also in existence, in which corn-rents are reserved by measure. To get over these incidents the average weight of the bushel of each description of corn must be fixed by authority. This done, and the measure of weight resolved on, it would remain only to fix the particular weight; and *one hundred pounds* suggests itself as convenient in many respects, and advisable with reference to a future probable introduction of the decimal system.

Everything, however, in this matter, must depend upon public opinion. Until those who are immediately concerned shall become convinced that they are losers by the retention of the present system, and would be gainers by some definite change, nothing will be done. Hence, the purpose of this paper is to bring the facts into general notice, and, if possible, to induce a more general discussion of them; not to urge any particular remedy, or to forestall the opinions of practical men touching the best method of dealing with what nobody, as far as I can learn, doubts to be worthy of one.

STACKING—THE SAFE CONSTRUCTION OF CORN STACKS.

The safe construction of corn stacks is of vast importance to the farmer at all times, and more particularly in precarious seasons and when labourers are few and in great requisition. A few words on this subject may be of service just at this time; our only regret is that we have not time to write more at length upon it. We shall not take notice of the form or shape of the stack: our desire is to suggest modes of construction, with the view of securing them against rains and storms on the top and sides, or damp at the bottom.

It will be borne in mind that in the past year much damage was sustained by driving rains, which penetrated into the sides and roofs of the stacks; this we are anxious to prevent this year, and in shortly describing our own mode of stacking, it may perhaps suffice.

We have no rick-stands, hovels, or constructed steddles, on which to erect our stacks. They are placed upon the ground, somewhat raised. A thick steddling of stubble, straw, or similar material, so as to protect them from rising damp, is freely used. We then commence our stack by making a shock or stook in the centre of the steddle, setting them as upright as possible, and then very gradually sloping the sheaves around, so as to keep the ears as far from the ground as with safety can be done without interfering too much with the outside of the stack and impeding the operations of the stacker, who must so contrive as to have a regular course of sheaves with their bottoms outside inclining downwards, and the ears safely secured within. The sheaves will thus stand or lie with their ears highest. Now this course is pursued throughout—the middle of the stack is constantly kept so full that every sheaf has a slight tendency to slope, or to keep the bottom end lowest.

This course is a certain preventive against injury from stormy winds driving the rains into the stack. The sheaves being all drooping, or slightly bearing downwards, the wet runs down the sheaves and off from the ends on to the ground. But should the common course be pursued, which is to lay all the sheaves flat or even, so as to have a level surface during the progress of building, then the middle will usually sink the most, and the outsides, or ends, will point somewhat upwards, which, of course, permits the beating rains on the sides of the stacks to find access by the gradual draining down the sheaves into the interior. The suggestion we wish to offer then is, that all the sides be so laid that every outside sheaf shall lie with its bottom end lowest, so as to shoot off the rains coming upon the stack.

The next thing we would notice is the *roofing*—this is of moment. Prior to laying what is commonly called the heave course, the middle of the stack is well filled in, so much so that the heave course lies with every sheaf slightly advanced over the side, and all considerably drooping, almost like a roof. This course is followed throughout the roofing; the middle is kept full; and the whole roof is laid very compactly, and so much slanting that all rains are, for a time, projected fairly over the heave course, until time can be spared to have them thatched.

The only other observation we would now make, is the mode of *building* up the stack: this we carry up as perpendicularly as possible till within about three feet of the heave; we then gradually lay over the sheaves so as to ensure safety against the dripping thatch, so that whether round or oblong in shape the heaves shall project on each side at least two feet over the sides and bottom of the stack; otherwise a continued rain, with a driving wind, would endanger the side, be it laid never so well.

NEW SUGGESTIONS FOR OIL-CAKES FOR FEEDING AND MANURE.

Much less attention has been paid, than we think the importance of the subject justly demands, to the utilization of the marc, or cake, remaining after the expression of various oils. Oil-cake, it is well known, is useful for two purposes—for feeding stock and for manure. Large quantities, however, in the oil-producing districts of the temperate and tropical regions, are applied to neither the one nor the other purpose.

When we glance over the extensive field of oil-production, and consider the numerous varieties of nuts and seeds which are turned to profitable account for the supply of vegetable oils (largely in demand and always increasing), we shall readily perceive that it only requires the application of some practical attention to the collection of much that is now wasted, and the scientific preparation of substances not yet commonly introduced as feed for stock, and for fertilizing land, to form a very remunerative branch of business.

Attention has chiefly been directed by the agriculturist to rape and linseed-cake, home-made or foreign, because they have been well tested. But there is no reason why the supply should be limited to those two kinds of cake, since it is important to bring down the price by the introduction of other equally useful substances, which but require a trial. The import of foreign oil-seed cakes has not very largely increased, although it is probable that home-made cake may be more extensively manufactured, as the quantity of various oil-seeds imported for crushing at Liverpool and Hull is now very considerable.

The following is the quantity of cakes imported in the last eight years and a-half:

	Tons.		Tons.
1848 ..	73,029	1853 ..	64,475
1849 ..	59,462	1854 ..	76,230
1850 ..	65,055	1855 ..	80,659
1851 ..	55,076	1856 to June	31,750
1852 ..	53,939		

The quantities of foreign seed imported in the last six years and a-half have been as follows, in quarters:

	Linseed.	Rapeseed.
1850 ..	608,986 ..	107,029
1851 ..	630,471 ..	82,394
1852 ..	796,561 ..	146,230
1853 ..	1,035,335 ..	86,815
1854 ..	828,513 ..	103,155
1855 ..	756,950 ..	162,352
1856 to June	338,703 ..	179,928

Some of the above was for seed-purposes, but the bulk is for oil-crushing. At Hull, especially, the imports of linseed and rapeseed for this year, from the north of Europe, are more than double those of the corresponding period last year.

The large increase in the receipts of rapeseed this year is a noticeable feature, the imports in the six months exceeding all last year's supply.

Notwithstanding the increased production, the price of oil-cake has rather advanced than receded; for rape-cake is now about £3 per ton dearer than six years ago, and linseed-cake is certainly not cheaper. Assuming 800,000 quarters of seed a year are crushed in England, this would give 108,000 tons of cake in addition to the foreign imports. But there are numerous other oil-seeds that we receive, especially from India. Besides the large quantities of linseed, rapeseed, and mustard-seed shipped from the ports of the Indian Presidencies, gingelly, or teel-seed, poppy-seed, castor-seed, Niger, safflower, cotton, and other oil-seeds, are also exported.

Last year, from Calcutta about 23,000 tons of linseed and 20,000 tons of mustard-seed, besides other oil-seeds, were shipped to various quarters—principally to Great Britain and North America.

From Madras about 6,000 tons of "lamp oil-seeds," as they are termed, were shipped; these are species of Iatropha and Ricinus. Some of the cake, after the oil was expressed (from seeds grown extensively on the Cape de Verd Islands), was analyzed by Mr. Herapath some years ago, and reported on to the Royal Agricultural Society: it appeared to be a useful, fertilizing substance, containing 4½ per cent. of nitrogen. Its purgative properties (being the croton-oil physic nut) prevented, however, its application for feeding purposes; but there seems no reason to doubt that, by chemical investigations, some neutralizing ingredient might be added to this cake, and to other residuary matters, such as mustard, rape, &c., so as to render them useful fattening food for stock. Linseed-cake has become of essential importance as food for cattle. And rape-cake might also be more extensively used for the same purpose, if given judiciously and mixed with bran.

The late Mr. Pusey found that he could mix rape-cake in the proportion of one-third with linseed-cake for his sheep. In Flanders it is often given to cattle, mixed with other cake. Each contains 12 per cent. or more of oil, and rape is often superior in the proportion of nitrogen to linseed. The comparative proportions of nitrogen in cake, according to Mr. Nesbit's analyses ("Farmer's Magazine," vol. xix., p. 302), were as follows, per ton:

	Lbs.
Oil-cake from Liverpool ..	109
,, ,, London ..	118½
,, ,, Marseilles ..	118¼
Rape-cake	115½

The refuse from mustard is not much used as food for stock, except occasionally and in very small quantities, mixed with other food, and then only we believe for sheep. It is too hot and too much of an aperient nature for feeding, but does well for manures; for which it is in constant demand in the neighbourhood of the mustard-mills, at 10s. to 20s. per ton less than rape-cake.

But besides those substances already enumerated, there are numberless other sources open to the farmers, which require developing. We import immense quantities of oil of various kinds. What becomes of the cake from which it is expressed? As far as we can learn, it is, for the most part, wasted; being neither applied for cattle-food nor for manure. What is done with the marc from the olive-oil so largely made in the Mediterranean countries, and the cake from the ground-nut (the *Arachis*) so largely used in France?—the cake of the colza-seed—the castor-oil beans, and other similar substances? Take, moreover, the two main sources of supply of vegetable-oil, the palm-nut and the cocoa-nut. When oil-cakes realize a price nearly equal to guano, is there no spirited merchant or oil-crusher in Ceylon, Cochin, or the western coast of Africa, who will prepare the cake in some merchantable shape, at a reasonable price, and test its value in the British market; forming, as it would thus do, a considerable adjunct to the other pecuniary commercial products of the palm tribe? Of palm-oil and cocoa-nut-oil we imported last year 52,150 tons weight. The average export of cocoa-nut-oil from Ceylon in the past three years was one million gallons a year; and from Cochin last year nearly 10,000 tons were shipped. What a source is here undeveloped, of profitable material for agricultural purposes!

Another equally extensive field of supply scarcely touched is cotton-seed cake. In the last five years the average amount of cotton-wool annually shipped from the United States to all countries was 457,883 tons; and the home-consumption there amounted to 133,490 tons. The Brazilian exports of cotton are about 13,000 tons. From India, Egypt, and other quarters there are also considerable supplies shipped; and after saving sufficient seed for sowing, an immense quantity is wasted. Each pound of ginned cotton produced yields 3 lbs. of seed; and after reserving one-half the seed for planting, the remaining cotton-seed of the United States might be made to yield 400,000 tons of oil-cake; the produce being about 50 per cent.

Another authority, however, tells us that 4 cwt. of seed will give 27 imperial stones of cake. In several parts of India cattle eat the cotton-seed greedily. In this country they do not take readily to the cake at first; but eventually they get to like it, and thrive upon it. Opinions differ as to its fattening properties for sheep compared with linseed-cake; but the much lower price at which it can be sold (nearly one half) is certainly a very material consideration.

In the East the cake of the ground-nut is used as manure in Malacca and Java, and is also considered an excellent food for cattle. An inferior oil-cake for feeding is made from the poppy-seed refuse in India. In Lubeck a marc called dodder-cake is made from the *Camelina sativa*. This cake, and that from the colza, the poppy, and the sesamum, or teel-seed, according to the analyses of MM. Souberain and Girardin, are fully equal in oleaginous matter to linseed-cake, the oil remaining in them exceeding 12 per cent.; while the phosphates and nitrogen they each contain are from 4½ to 6½ per cent.

The Chinese are much more attentive to the application of oil-cake as manure than we are; and if they find it profitable, surely under our high-farming system it would be the interest of the cultivator of the soil to draw supplies of this fertilizer from various quarters. Were a demand once created, and the value of any one of these cakes tested on an extensive scale, supplies at a cheap rate would soon come forward very readily. A large white pea, of which immense quantities are imported into Shanghae from the Eastern archipelago, is used to express oil. The refuse cake, in the shape of Gloucester cheeses, is distributed through the empire, both as food for pigs and buffaloes, and also for manure. Probably this is the Japan pea, which is spoken of as so prolific, and has recently been introduced into the United States.

We have said enough on this point to direct attention to new channels of supply for oil-cake. Some of these may, in the course of time, be made available for the service of the British farmer.

The tropical regions in which these oil substances are produced scarcely require manure; and there is, therefore, little necessity for returning the residuum to the soil. In Great Britain, however, the severe course of cropping, and the exhaustion of the soil by roots and grain, necessitate the use of rich and expensive fertilizers.

HARD *VERSUS* SOFT WATER.

I desire to answer, through your columns, a Mr. "Rustic," who says he does not believe what I said at the State Fair at Elmira. If he was sufficiently acquainted with the subject to make the controversy interesting to practical farmers, I would not make any apology for the space I may occupy in your paper. I very much regret that Mr. "Rustic" had not given his true cognomen, as it might have been a great pleasure to have knocked a few rusty scales from a good piece of steel. As he did not, I will only attempt to open his eyes and ears, without appealing to his nice sense of honour or understanding.

Mr. "Rustic" starts off and ends by saying—"I was one among a large number of persons who listened to Mr. D.'s remarks at Elmira. I thought then, and still think, he assumed more than any or all of his facts will warrant. At any rate I do not believe that Mr. D. could discern any difference, though I heard him say he could tell, by handling of the fleece, whether the sheep that grew it fed upon lime-stone soil or otherwise."

I did say that I could tell a fleece of wool that grew on soft-water land from that which grew on hard, all other things being equal; and leaving out "all other things being equal," makes as much difference as it would for Mr. R. to read his bible, "Go thy way and sin," and there stop. But I will not stop here to complain of the unfairness of a writer, for leaving out important parts of sentences, who assumes any other name than his own.

All things being equal means sheep of the same grade, and kept equally alike on hard and soft water land. The hurl of a fine Saxon sheep differs as much from the hurl of a South-Down, Leicester, Cotswold, or native sheep, as No. 5 wire differs from No. 15; and no man would pretend he could tell, taking two fleeces, one a Leicester and the other Saxony, which grew on hard or soft water land, as the grades differ from different keeping, as well as other causes. And I take it for granted that the man who understands growing wool, if not more modest than Mr. R. now appears, or as brainless as a hen, would have corrected such a palpable error on the spot.

I did not say that I could tell a fleece of wool that grew on soft from one that grew on hard water land, all other things being equal, at the State Fair, without knowing what I was talking about, where the men of science as well as the practical men were congregated, as I was well aware that the almost-universal sentiment was against me. I had tested it many ways, for twenty years; and the last test I will give, which was conclusive to me, and may be beneficial to "Rustic" should he ever grow wool, though he did *not believe me*.

In 1850 my father and myself purchased and divided one hundred imported Saxony sheep, and divided them as equally as possible. He resided in Seneca County, on the hardest kind of hard-water land, while I resided on soft. Many years after I hired him to keep one hundred ewes from one shearing until the next. I brought them home, weighed the sheep and their wool. Their average weight was 4lbs. more than those I had kept. The weight of their fleeces was not quite three ounces more. The wool from 92 or 93 brought 40 cents per lb., while that from the same grade of sheep, kept on soft water land, brought 56 cents, both being equally well washed, and neither had ever been allowed to run on ploughed land. Having a large clip, I went to Lowell, and made a contract for first and second grades of Saxony at the above prices. I packed each kind by itself, and put a private mark on the sacks, that there could be no mistake; and when the wool was put in the warehouse, and the assorter came to sort, he did so with honesty, and more nicety than I had ever seen a man capable of doing before. The result was, he threw out every fleece but three out of those that had been kept on hard water land, remarking it was good wool but harsh, while every fleece of many of the sacks of those kept on soft water land were passed as first quality; and both the manufacturer and assorter were as ignorant of the fact that there was a difference in favour of soft water as "Rustic" himself, and, for aught I know, remain so to this day; for, when I went there to make a contract, I asked what they paid for first quality of Saxony wool. They asked, emphatically, where it grew. I told them in the southern part of the State of New York, near the Pennsylvania line. I was answered, there was no such wool grown there. My reply was, I did not come there to inquire what kind of wool I grew, but simply to inquire what they paid for the very best, and so along down to the lowest grade. There was not the difference in the grade as in the price which I received for my first quality over the second. Believing I had no first quality wool, they were anxious to get the second quality at a low figure, and were willing to put the first at a high mark. For a man who is not accustomed to sorting wool, and whose hand is not sufficiently soft to detect differences, his lips are a much better guide.

Do you believe, Mr. "Rustic," that I can tell the sugar that is made from the tree that stands on soft, from hard water land, all other things being equal? And what I mean by equal here is, the sugar shall be made from both, either from the last or first run of sap, as the grain in both cases is much better at first, and gets softer until the buds start, when it will not make sugar.

And it is no trick, Mr. "Rustic," to tell the apple that grows on soft from hard water land, all other things being equal. "Equal" means that you must take the apples from the trees of the same age, as old trees do not require so much sap as young ones, which grow the apple with more rapidity; consequently the apple on the old tree will mature sooner than on young ones. And to test it, you must put both in the same cellar, as some cellars are warmer and moister than others. I have tested both to my satisfaction, by putting both kinds in my cellar, and by shipping both kinds to London and Liverpool. I shipped, in 1847, ten barrels greenings each, in March. Those that grew on soft-water land, on their arrival, were nearly all sound; those from hard were more than half rotten. Those from hard-water land were larger and finer flavoured early in the season.

There are some kinds of grain that I do not ask that all other things should be equal to detect the kind of soil on which it grew. It is a very easy matter to tell wheat when it is growing, and no human skill or ingenuity can grow it on soft water to make it look like that which grows on hard water land; and after manufactured into flour it is easily detected, as it will take at least from 3 to 5 pounds more liquor to wet 100 pounds of flour from wheat that grew on hard water land.

And now, Mr. R., if you don't know from the appearance of some of the most insignificant plants common to our country, to the loftiest pine, whether they stand on hard or soft water, or whether they feed on the surface or subsoil—if you are but one-half as apt at learning as you seem inclined to perversion, I will try to wallop some useful facts into your understanding of the effect of soft and hard water on land.

On hard-water land the head of wheat usually grows perfect, that is, the berries in the head will all be of the same size; on soft-water land they will be much larger in the middle of the head than at each end, and the crease much larger in the berry; and I have never been able, or seen a man that was, to remedy this evil. I have tried by applying lime at the rate of 20 bushels up to 500 to the acre; where the larger quantities were applied, it was put on the land in smaller quantities for several years. You need not go to chemists to ascertain whether the water is soft or hard. You may learn with certainty from the instincts of animals, at a glance, what you have failed to learn from science or the knowledge of man.

There are certain kinds of fish that live in soft water, others that live in hard, while others live in salt, and some in all.

There are some animals, like man, who settle in all countries, healthy or unhealthy, and others that settle where the fever and ague never grows or comes; and if you will but study the unerring laws of Nature, you will understand that lime-water land has quite as great an effect on the animal creation as the vegetable. From more than twenty years' experience, with more than five hundred actual tests, I have found to my satisfaction that calves and lambs have stronger bones, and can stand to travel from six to ten hours younger from dams that have lived and fed on hard-water land than those from soft.

I have purchased more than 10,000 head of cows and ewes in Ohio, Northern Pennsylvania, southern part of Chatauque, Cattaraugus, and Alleghany. Nearly all of Ohio where I purchased is hard, and the balance soft-water land; and I always furnished my drivers with a conveyance to carry along the young until they could walk; also furnished a memorandum so as to set down the exact time the young of each and every one had to be carried, and the town in which they were bought; and I have gone through all the process myself. I therefore do not hesitate to say I know that it is so. And after grown up, I have never been able to discover any difference, which I have tested in many ways, by breaking and working oxen, in good condition, and sold them one of each kind in the yoke to neighbours, and worked them hard, and kept them poor.

Mr. "Rustic" says:—

"For forty years or more, I have been accustomed to the use of hard water, and in pretty large quantities, but as yet I have not heard or known any bad results, so far as my own system is concerned."

I will not say I do not believe Mr. R., for the reason I am bound to believe him truthful; and yet I should think from his communication he would not be very likely to judge correctly of the cause and effect, and such men should be very careful to look around and learn what they can on the surface. Let me ask if the gravel is not a common complaint on hard-water land? and how many cases have you ever known with men that live all their days on soft-water land? Or, in how many instances did you ever hear of the cholera raging on soft-water land? I can point you to a hundred instances where it made its deadly ravages within a few miles of soft water. One instance I knew where it worked up to the very springs of soft water, and the birds and flies made their escape from the hard to soft-water land.

Now, Mr. R., let me say to you, it is quite a simple and easy matter for one that knows no more about farming or soil than you do, to satisfy yourself beyond a contingency, by watering the different kinds of plants that grow in your garden, for two or three years, a portion with soft, and the balance with hard water. And to make a fair test, your water must be highly charged with lime. It will not be sufficient to say that water is an "universal solvent," and by running over lime-rock it becomes lime water, as that is not the way I understand lime water is made; nor do I understand that there is no pure soft water except by distillation. It is by no means certain that the water of a country is hard because it is a limestone country; nor do I think, Mr. R., if you ever had any experience in irrigating, you would hazard the assertion, "that for poor soil undoubtedly rain water is the best, and the longer it has been running the better." "The longer it has been running the better," is a new idea, and one that must have entirely escaped the Creator at the time rain was invented, or the clouds would have been hoisted up a little farther, or the earth settled down a peg lower, so as to have exactly conformed with "Rustic's" particular views.

I saw an article copied from the "Virginia Farmer," which I fancy means me—

Limestone Water for Irrigation.—The "Virginia Farmer," alluding to the discussion on the effects of limestone water in irrigation in the *Country Gentleman*, says—"One writer contends that the calcareous tufa will be deposited on the surface of the land in so close a crust as to smother the vegetation. We wish that writer would go to Rockbridge, Va., and see our grandfather's meadow, which has been irrigated with limestone water and not ploughed for forty years, and instead of a desert of calcareous tufa, he will see a soil which cannot be bought for 100 dols. an acre, covered with such a sward as would do honour to Orange Co., N.Y. Our best lands are those which have been irrigated longest with our highly charged limestone streams."

I will not say I do not believe what that Virginian asserts, but will say if he will give me the name of the farm in Rockbridge, Va., that I can find it, I will travel all the way to see if there is no mistake; for I have travelled in Virginia, and have never seen any such results, and that is what I have first looked for in every town and county in which I have travelled, and have hitched my horse in every county and the most of the towns from Manhattan Island to the Mississippi, and never have seen any such results. Though many times told that the water that farmers were irrigating with was hard, on examination I found it uniformly soft. The springs that feed the Croton are among the best for irrigation, and the river, carried to the city, has contributed to the health of the inhabitants more than all other things besides. I want to see that farm in Virginia, and more especially that man that has the capacity to improve land for forty years by irrigation with lime water. A. B. Dickinson.

Hornby.—The Country Gentleman.

ENGLISH HORSE-DEALERS.

Messrs. Elmore, R. Dyson, and Tilbury once held sway among their brethren; but Mr. Collins, of Mount-street, Lambeth, has recently become by far the largest purchaser of hunters at Horncastle. The Lincolnshire farmers generally get into the habit of doing business with one dealer, and Mr. Collins will buy about seventy from them during the Horncastle month, the best of which range from £160 to £200, and occasionally higher. Many of these do not get to the fair to be sold, as formerly, but are purchased privately, and join the main string at a certain place of rendezvous; but scarcely half of them reach his London stables, as he now has a show of them both at Newark and Barnet, where purchasers and brother-dealers attend to cull. He always buys according to what is required for the particular season; and if the dwellers in Mount-street were to lose sight of their almanacks and the swallows, they would know that spring had come again by the endless supply of stout cobs and park hacks which would, week and week, take up their fleeting habitation among them. Mr. Thomas Collins acts as London salesman for his father, who, along with his *fidus Achates*, James Webster, visits every great fair out of the 190 odd which the trade profess to frequent, not only in the midland counties and the north, but in Oxfordshire, Wiltshire, and, in short, wherever he can get a wind-scent of a likely horse. He is a striking instance of what honesty and good judgment can do for a man. It it little more than fifteen years since we remember him driving his roan pony to Osborne's, in Gray's-inn-lane, to buy "machiners;" and his rise since then, through the successive stages of Aldridge's and Tattersall's, to be the wholesale Leviathan of the trade, has been wonderfully steady and rapid. The pretty general belief among the initiated is, that he sells upwards of eleven hundred animals in the course of the year, at an average of £80 a-piece; and, as a type of the universality of his business, we may mention that, as we lately strolled through his stables, we espied a first-class hunter almost cheek-by-jowl with a spotted cob, who looked quite ripe for the jocular society of Tom Barry over the way. All the great London dealers purchase from him; and their French brethren, Bénedick, Crimeaux, Ançell, &c., are amongst his largest customers, and occasionally go as high as £170 for a riding horse. Mr. Joseph Anderson is also at the very top of the tree, and buys largely of first-class hunters and hacks; he has, in fact, long been to Piccadilly what Bénedick is to the *Champs d'Elysees;* and his brother, Mr. John Anderson, has a very rising business at Green-street, Grosvenor-square. Mr. Quartermaine, who once "hailed" from Oxford, buys carriage-horses as well as hunters and hacks, and gives and gets, without exception, as high prices as any man of the day. He cannot rest if there is a good thing in the market, and always has "a particular reason for wanting it directly." We seldom give a passing peep down those trim corridor-sort of yards, which make one feel more than anything else the high dignity of the horse in England, and see those mysterious, knowing little knots of purchasers which are ever scanning him there, without calling to mind how the Duke of Queensberry was wont some fifty years since to test the paces of his running-footmen candidates, by seeing how they could run up and down that selfsame pleasant dip in Piccadilly, he watching them and timing them from his balcony. But our note must tell the rest.* Mr. S. Cox, of Stamford-street, buys all sorts, from high-class hunters down to cart-horses, in which his uncle, the late Mr. George Cox, drove a very thriving trade among the brewers and distillers. Mr. R. Phillips, of Knightsbridge, assisted by his father-in-law, Mr. Tawney, buys very largely in Shropshire, and furnishes a great many entire horses and other thorough-bred stock to the foreigners. The Emperor of the French, who has been amongst his largest customers, christened one of his favourite riding horses "PHILLIPS," in his honour; and it was from his and Mr. Quartermaine's stables that the King of Sardinia made his selection in his recent visit to England. Along with Messrs. R. Dyson and East, Mr. Phillips holds the contract for the cavalry horses, nearly all of which pass through their hands, and are gathered from every part of the country, by the aid of upwards of twenty commissioners. Messrs. Wimbush and Deacon, Mr. Gray, and Mr. Joshua East (who has succeeded Mr. Dickenson, and is in partnership with Mr. Phillips), Mr. Withers, and Mr. Hetherington, are the largest purchasers of carriage-horses, though some of them do so merely in their own job-master capacity, and not to sell again. They supply themselves not only from Mr. Collins and the other London and country dealers, but attend the great fairs in Lincolnshire, Yorkshire, and Northumberland. It is a nice question, which probably the surveyor of taxes alone can solve, whether Messrs. Wimbush and Co. or Messrs. East and Co. keep the largest number of horses to let out. We believe that they run within three or four pairs of each other, and that at times each firm has owned not fewer than 1,400 pairs. The Messrs. Mason, who succeeded Mr. Elmore, buy their hunters and hacks from Mr. Collins, and the larger dealers, and not often out of the breeders' hands. Mr. Ibbs Brown—or Harboro' Brown, as he is popularly termed—is also in that line; while Mr. Saunders, Mr. Attwood, Mr. Greenway, Mr. Philippo, and Mr. G. Waymark, &c., are what may be called general-purpose men. Mr. Pearl and Mr. Sewell draw, we believe, their supplies chiefly from Norfolk and Suffolk. Mr. Blackburn principally looks after black entire horses, for funerals, which he imports from Dunkirk and elsewhere; and Mr. Smith, of Whatton, makes his voyages of discovery into Germany and Denmark in search of cart-horses. Among the principal country dealers, Mr. John Payne, of Market Harborough, has done a first-class business for thirty years; and Discount and a countless number of Quorn and Pytchley hunters have passed through his hands. He has, in fact, been to the Leicestershire side of the country what Mr. Kench has been to the Warwickshire; but he has now, we are told, almost given up business. Since his secession, Mr. John Darby, of Rugby, has become one of the most eminent country dealers in hunters and hacks; and Mr. Denham, late of Derby, but now of Kegworth—a first-rate judge, and a first-flight man to boot, in his twelve-stone days—must not be forgotten. Mr. Gething, of Orton, near Newark; Mr. Potter, of Ashby-de-la-Zouche (who used to supply Sir Richard Sutton with several of his Irish horses); and Mr. Stanton, of Grantham, are known for hunters far and wide in the midland counties: while Mr. Barker, of Roade, near Northampton, passes an immense amount of first-class cart-horses, besides carriage and riding-horses, through his hands in the course of a year. The Messrs. Painter, of Bicester; Mr. R. Chapman, of Cheltenham; and Messrs. Haines, of Highworth, are also constant attendants at the great fair, and ever on the look-out for likely hunters and hacks. Mr. Murray, of Manchester, generally takes a large string of hunters northwards from Horncastle, and, with Mr. George Garwood, does a large business in hunters, hacks, and carriage-horses, in Manchester and Cheshire. These dealers, as well as Messrs. Ainger and Bretherton, of Liverpool, buy largely of Irish horses. In Norfolk, Mr. George Hill, of Serle; Mr. Robert Burt, of Rainham; and Mr. Coleman, of Norwich, have the leading business, which takes rather a first-class hack and not a hunting turn. Mr. Charles Symonds and Mr. Wheeler, of Oxford, deal exclusively in hacks and hunters, but the former seldom attends any other fairs than Horncastle and Lincoln, and purchases elsewhere through a commissioner. He horses Jem Hills and his whips during the Heythrop season, and sends the horses they have ridden up to Tattersall's each May. His stables are well known to every Oxford visitor as one of the most perfect things of the kind, and are quite as orthodox in their management and appearance as the venerable *Alma Mater* herself. Reverting once more to the North, we cannot pass over Mr. Robson, of Newcastle, and Mr. John Woffinden, of Malton, who buy extensively from breeders. Like the *beau monde*, the turf, and the bar, the horse-dealing profession has its "D'Orsay," whom it is not our intention further to indicate. The Messrs. Colton, of Eagle Hall and North Collingham, and Mr. Rawlinson, of Brand Broughton, near Newark, are in a very extensive way, and the former perhaps sell as many horses as any firm in the course of the year, a large proportion of which are Irish, and specially imported by themselves. Mr. Nat. Welton, of Breadfield, in Suffolk, is, we believe, rather a middle-man than a dealer, and does business almost exclusively with Mr. Collins and Mr. Cox; and, as graziers of embryo Clinkers and Clashers, no names rank higher in Lincolnshire than Welfitt of Louth, Fowler of Kirton Grange, Greetham of Stainfield Hall, Slater of North Carlton, Bartholemew of Goltho, Grantham of Stixwould, Brookes of Croxby, and Chambers of Reasby Hall; nor in Yorkshire than Hall of Scarboro', and Wood of South Dalton. The first and last named, we believe, take out a license, and graze carriage-horses as well as hunters. Mr. Hall is the master of the Holderness, and grazes upwards of fifty young hunters, and nothing else, annually in the neighbourhood of Beverley. At the York show, in 1853, he exhibited twenty hunters of his own grazing, valued at 200 guineas each, which were allowed even by his critical countrymen to be perfect gems. Lord Henry Bentinck has, exclusive of kennel hacks, about fifty-five horses at Lincoln during the hunting season, and not a few of them have an early remembrance of Mr. Hall's pasture land, from which, in some instances, they have been transferred for a 400-guinea consideration.—From *The Post and the Paddock*, second edition.

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* The running footmen drank white wine and eggs, and carried some white wine in a large silver ball of their tall cane or pole, which unscrews. * * * * * They put on the Duke's livery before the trial. On one occasion a candidate presented himself dressed, and ran. At the conclusion of the performance he stood before the balcony. "You'll do very well for me," said the duke. "Your livery will do very well for me," replied the man, and gave the duke a last proof of his ability as a runner by then running away with it.—*Notes and Queries.*

MANAGEMENT OF TREES.

Sir,—I am happy to observe that amid the advance of other departments of art towards perfection, arboriculture, though long neglected, is now considered of sufficient importance to be treated as a science. The first prize essay of the New Scottish Arboriculture Society, inserted in the *North British Agriculturist*, 28th May, 1856, is a favourable indication of progress. Although only a sketch, and hardly full enough in regard to the science of the subject, it may induce those who are interested in arboriculture to make themselves acquainted with the manner trees are treated in different parts of the kingdom, thereby enabling them to compare one system with another, and to adopt that which is best. As a first article, we fondly hope that it may be the forerunner of much good. Great improvements may be anticipated from arboricultural societies. I am aware that they are very rare; and therefore rejoice to know of others which have been instituted at Brechan and Peebles, Tweedside, on principles which will prove satisfactory to those who may be inclined to assist in accomplishing the results anticipated, and all who may have any notion of the beauty which their anticipation may realize. To those to whom beauty of the system imparts no meaning, it may be suggested that woods are a source of profit, tempering the climate for the benefit of the flocks and crops of the husbandman, and, in an economical point of view, yielding money to the owner, who may look on them, not only as an ornamental, but highly valuable species of property. The Edinburgh, Brechin, and Peebles Tweedside Arboricultural Societies might conduce to the advancement of science by examining the different systems which prevail in the country. An association of practical and scientific men may, by co-operating in the pursuit, and communicating to each other the result of their scrutiny, distinguish and separate the proper from the improper practice in the management of trees, and ultimately rest upon the most rational method of treatment; impressing by their authority on arboriculturists generally the success of the plan they patronise in bringing trees to the utmost perfection. The law or plan pervading the structure of trees must be known before we can arrive at reasons calculated to insure belief in any system of management. I think the shortening the branches into the form of a slender cone the proper way to accelerate the growth of trees, and to make them attain the greatest magnitude and sound timber in the shortest time is the golden rule; for an arrow, a race-horse, a swift-flying bird, a fast-swimming fish, and a fast-sailing boat have all similar configurations, to enable them to fulfil the purpose for which they were formed; while the poplar, willow, and silver and spruce firs, which are all shaped in like manner, are fast growers. The side-branches of all trees, when young or neglected, ought to be shortened in conformity, to insure rapidity of growth. If we properly observe the operations of Nature, we shall never be at a loss for principle to guide us in the management of trees; but unfortunately these have been too often treated as mere inanimate matter, although possessing the same chemical properties as we do under different laws of organization. Vegetables are perfect in their structure; and to bring them to perfection is by the cultivation of the soil, and at distance in proportion to the kind. Trees are imperfect; but Nature has provided for their improvement by shortening the branches, which concentrates the whole strength into the body of the tree. The usual process was to divest the trees of all their branches to within a few feet of the top; but this is contrary to nature, retarding the growth and diminishing the value of the wood. Let us suppose the branches to have spread out to a diameter of eighteen feet; should the diameter of such trees be shortened to a diameter of six feet, the pressure of the ascending sap must be increased in a proportional ratio. This may be explained on the principle of water in rivers. As the depth is increased, the current may be quickened from three to twelve miles an hour; or to make double the quantity of water run through the same hole, we shall suppose it requires four times the pressure; and, for the same reason, three times the quantity running in an equal time must run with three times the velocity, and in turn will require nine times the pressure; showing by the law of fluids the efficacy of shortening the branches, augmenting thereby the velocity of both the ascending and descending sap. By reason of this, the foliage is increased in the same ratio, which in turn attracts a proportional nourishment from the atmosphere; the descending sap proceeding from the temperature of the air, although a few degrees lower, while the ascending is from the earth, as the two saps first commingle in the leaves and then in the roots. The whole system depends on the proportioning of the branches, to balance the effects of the ascending and descending sap. This attended to, trees advance feet, instead of inches, in height, with a proportional circumference, compared to those differently managed or neglected. We find that trees make the most rapid advance when the branches are shortened till the tree is at least 26 feet in height, when close pruning may commence, unless shelter be required. In the Edinburgh *Literary Gazette*, 1830, it was predicted that, before ten years elapsed, we should look back with surprise on our ignorance in the management of trees. We hope the time is now come. In every object there is something to see beyond the reach of common eyes, and the marvellous operations of Nature are incessantly receiving fresh illustrations. Ingenuity extends principles to practical purposes, and lays open truths previously shut up and valueless. May arboriculture no longer remain in the background, but rise to an equality with horticulture as a science! I have turned my attention for a time to the better cultivation of trees, both as regards pruning and thinning; what I projected in theory I have found ratified in practice. It has been said by all writers on the subject, that young unhealthy trees when cut over shoot up with full vigour; but it is not proper in all cases to cut down. But if cutting over completely concentrates the sap, and on similar principles suppose we shorten the branches to one-half, the sap by this means is augmented for the remainder. The wood of trees so reared is of a stronger texture, the retaining sap being of a higher temperature, from the short distance it has to return to the body of the tree. I have introduced the system into fifteen counties in Scotland, and it is on the advance in England. The great advantage of agricultural and horticultural papers, compared to arboriculture, is that they they communicate to each other their mutual experience, and state what they have found to be good and calculated to do good, and to avoid the rocks which they have split upon, or the shoals on which they formerly stranded. I fondly hope that the arboricultural societies may increase in hundreds, and flourish; and long may their wide-spreading fame and devotedness to the science attract public attention to the system, for the advantage of the nation.

Biggar, N.B., Aug. 18. G. C.

HEDGE-ROW WEEDS.

During some recent rambles in various parts of England, nothing struck us more forcibly than the general abundance of seeding weeds in the hedge-rows and vacant plots by the road-sides. There were some striking contrasts to this gross neglect, and none more so than on a long, dreary piece of down-land between East Ilsley and Shilton, in Berkshire. We never saw cleaner, neater hedge-rows than near the latter village: and the farmers, with praiseworthy foresight, had men employed in cutting down the thistles just blooming on the Downs. Thistles, dandelions, groundsel, and similar parachute-seeded plants, when allowed to perfect their seed, become a wide-spreading calamity to the neighbourhood; and we cannot urge too strongly upon parish authorities and railway companies, as well as upon the trustees of turnpike roads and individuals, the very great importance of destroying such weeds, or, at all events, preventing their seeding by cutting them down as often as they reach a blooming state. So important is such prevention felt to be in Australia, and to such an excess have thistles attained from neglect in that colony, that the legislature has visited with a severe penalty those who neglect to destroy them.

With every respect for British liberties, we should have no objection to see a similar statute passed, enforcing upon all occupiers of land in the British Islands a similar destruction of migratory weeds.

It is quite true that Britons have a right to do what they like with their own; but their doings with their own property ought not, and must not, cause injury to the property of others. A manufacturer may have as much smoke and as many corrosive fumes as he may choose come out of his chimneys, but he must have his chimneys so high that the smoke and the fumes do not injure the crops of his neighbours; for if that smoke or those fumes do cause such injury, then the manufacturer is liable to be mulcted in damages.

If a cultivator of the soil could prove that a certain overwhelming invasion of thistles sprang up from seeds blown to his ground from the neglected ground of a neighbour, we are not sure that damages could not be recovered against that neighbour; but the difficulty would be to prove that the thistles sprang up from seed so migrated.

Every cultivator of the soil knows, and he ought to act as common sense dictates upon such knowledge, that every weed is a robber, taking from the soil that which ought to add to the nourishment of the crop cultivated, among which that weed grows. Every cultivator also knows that the old adage, "One year's seeding, seven years' weeding," is scarcely an exaggeration of the increased hoe labour and fallowing caused by one year's neglect to destroy the weeds. That it is scarcely an exaggeration is evidenced by the single fact that 8,000 seeds have been ripened in one poppy-head.—*Cottage Gardener.*

THE FARMER.

The farmer is a happy man,
He raises all he needs, sir,
The foremost stands of all the van,
All occupations leads, sir.

His cattle furnish beef enough,
His sheep, a heap of wool, sir,
His children hearty are and tough,
His coffers always full, sir.

His barns are large and all well filled
With hay, and corn, and rye, sir,
His orchards rich, his land well tilled,
Both fruit and food supply, sir.

His cellar in the autumn shows,
Of roots, a bounteous store, sir,
He's well prepared for winter snows—
What could a man want more, sir?

His horses kept in first rate trim,
For wagon, chaise, or sleigh, sir,
Are ready, now, to carry him
At any time of day, sir.

His cows are many, and the best
The country can afford, sir,
His butter, cheese, and milk attest,
His barns have been well stored, sir.

His pigs are of the Suffolk sort,
You never hear them squeal, sir,
Because they never are kept short,
But filled with corn and meal, sir,

His hens are not of Shanghae sort,
He chooses not by size, sir,
An egg's an egg, and when 'tis bought
As large a coin supplies, sir.

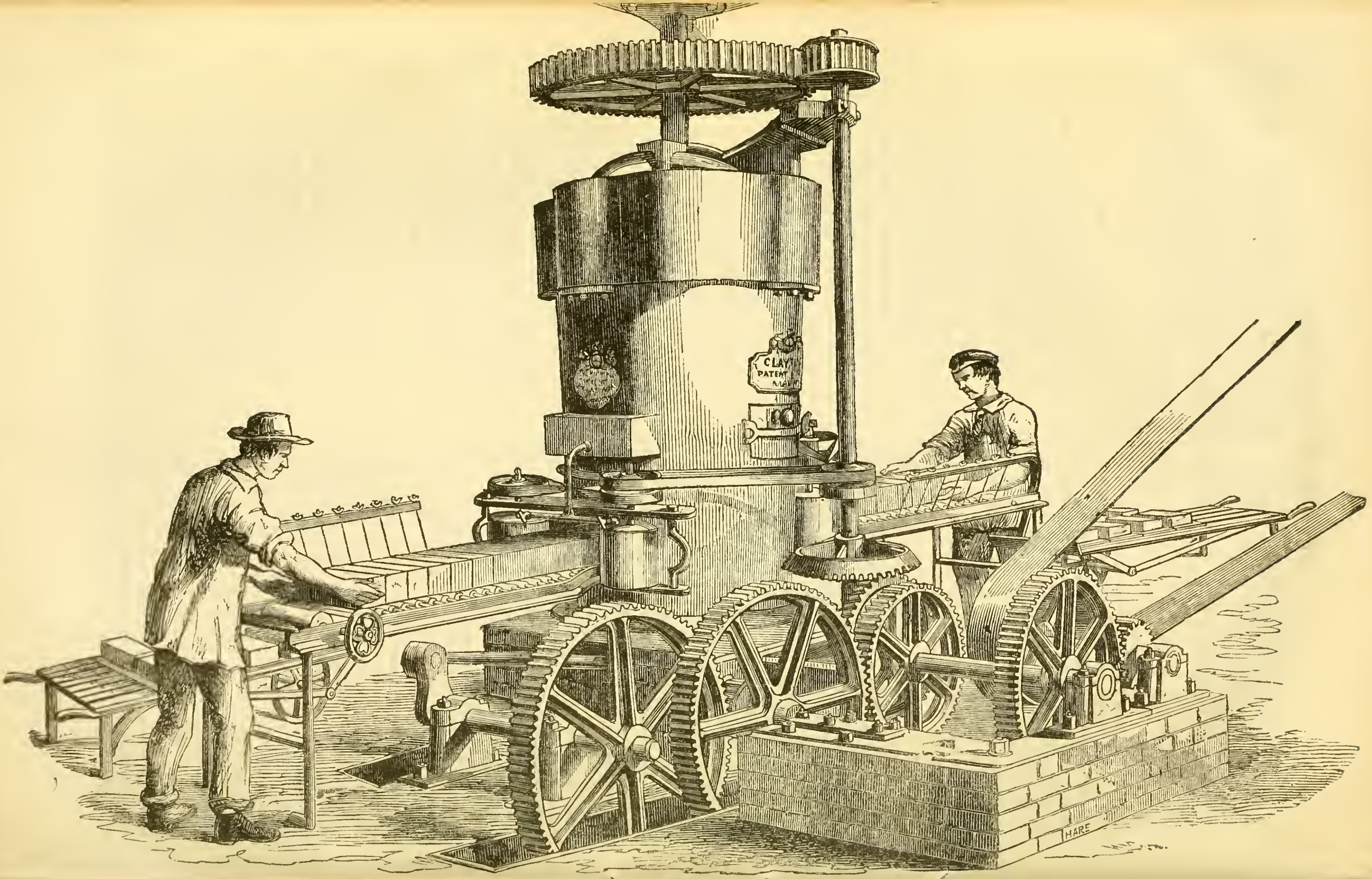
His turkeys and his geese are fine,
Of both he has a store, sir,
In fact, the farmer has a mine
Richer than golden ore, sir.

His very bees are "busy," too,
And fill his hives with comb, sir,
They have as much as they can do,
To bring his honey home, sir.

Who would not choose the farmer's lot?
What though he has to work, sir,
Much happiness by toil is got,
But who would like a *shirk*, sir?

There's land enough for all young men,
Our country is a great one,
Just pull up stakes and hasten then,
Where fortunes rich await one.

—*American Paper.*


CLAY
PATENT
HARE

BRICK-MAKING MACHINES.—CHELMSFORD MEETING.

Of brick-making machines we have three entries in our note-book exemplifying the march of progress, with a fourth on burning bricks. The first is Clayton's, of the Atlas Works, London; the second Chamberlain's, of Kempsey, Worcester; the third Williams', of Bedford; and the fourth a model of a brick-kiln, by Burrell, of Thetford, Norfolk.

CLAYTON'S BRICK-MAKING MACHINE.

It was with no ordinary degree of pleasure our eye caught the first glance of Mr. Henry Clayton, of the Atlas Works, London, as an exhibitor in the trial-yard at Chelmsford. For some years past he has been a stranger at the summer meetings of the Royal Agricultural Society of England. We have seen him at Paris and the other exhibitions of the Continent of Europe, gaining his golden medals of honour; but at home his place has been empty. Now, however, that he has again appeared with triumph we hope it will prove the first of a long successful course of competition, exemplifying to brickmakers and the landed interest generally his determination to maintain the elevated position he has so long held in the brick and tile yard.

At Chelmsford Mr. Clayton exhibited some fourteen different articles, but his "Clay-preparing and Brick-making Machine," a drawing of which accompanies this, is that which we propose confining the attention of our readers to, at present. It was exhibited in the trial-yard, among the machinery in motion; was driven by a small portable engine of Clayton and Shuttleworth's, and attended by four hands made 210 bricks in five minutes, being at the rate of 25,200 per day of ten hours! The workmanship met with universal approbation, the quality of the bricks being far superior to those made by hand.

The general appearance of the machine is similar to what it was when we last noticed it; but the details have been so improved that it will be necessary to give a general description to do them justice.

As formerly, it consists of a pug mill, with a chamber in the lower part, from which the clay is alternately expressed through a die at each end, by means of a ram or piston, worked with a crank, seen on the left side of the drawing. Formerly the ram was worked by means of a rack and pinion, constructed on the reverse motion principle. But the vibratory action of the teeth of the rack and pinion was found objectionable, inasmuch as it communicated an uneven pressure and flow of clay through the dies, the very reverse of what is wanted in successful brick-making. To obviate this, the crank has been substituted, and now the volume of clay comes from the die with an uniform motion and density. The machine is driven by a strap from the engine, over a drum, as seen on the right; a vertical shaft, with bevel gearing, working the pug-mill from the top.

The parts deserving of special notice are (1) the internal improvements of the pug-mill with the chamber in which the ram works; (2) the rotating orifices of the dies; (3) the intermittent motion of the streams of clay, admitting their being cut into bricks while stationary, or in a state of rest; and (4) the stiffness at which the clay can be worked by means of such improvements, the bricks being fit for "walling" without sustaining any damage in being removed directly from the machine.

As already stated, the chamber is formed within the cylinder in the lower part of the pug-mill. The shaft of the pug-mill is supported by a bridge over this chamber, so that the clay falls directly into it from the arms or knives. In almost all prior cases the chamber was situated below the pug-mill, so that the clay had to be expressed through a narrow orifice into it, a process which consumed a large amount of the motor force required to work the machine; but this waste of force is not only obviated, but the machine simplified at the same time, for the mechanism of the chamber itself is of the simplest possible construction, while the broad vertical arms required to express the clay in the old machines are not required in this. These are important steps in the march of progress, as they admit of drier clay being used, as subsequently shown.

A rotating "orifice die" or mould is attached at each end of the chamber as shown in the drawing, and consists of two vertical moulding rollers, covered with a porous fabric, and supplied with water internally from a box or fountain in front of the pug-mill, one roller being on each side the stream of clay. The roller on the near side is driven by a strap from the vertical shaft which communicates motion to the pug-mill, and that on the off side by a strap from the shaft of the near one.

The use of these rotating orifices is (1) to admit of the clay being worked in a much drier state; (2) in moulding the brick to give it an uniform state of solidity; (3) to produce a proper angle with the least amount of friction in the process; and (4) to give to the brick a clean, smooth, and even surface. We might enlarge upon the importance of each of those objects did our limits permit, but this we must leave to our readers, with the general remark that they were never obtained until the invention of the *rotating die* by Mr. Clayton; all prior attempts at expressing clay direct from the pug-mill through the common die to form solid bricks being abortive.

At each stroke of the ram the length of the stream of clay expressed through a die makes six ordinary bricks, so that the time the clay is being expressed through the die is equal to the time it is at rest, consequently each man has the duration of a stroke, or the time six bricks are being expressed, to cut off six bricks and place them on the barrow for being wheeled by another man to the "walling" yard. The arrangement here is beautifully simple, calculated to expedite the work, satisfactorily accounting for the great number of bricks the machine turns out in a day.

And, lastly, from the chamber extending across the pug-mill, from side to side, and being wholly open at top, and from the action of the rollers at the mouth of the dies, much drier clay can be worked than could be done prior to the date of these improvements; hence the bricks are not only made of a better quality for "walling," but are also sooner ready for the kiln to be burnt, thus realizing certainty of production, with a great economy of manufacture over the old system.

Such, with the aid of the drawing, will enable our readers to appreciate the important improvements Mr. Clayton has lately effected in his brick-making machine, and the advantages which it possesses in comparison with others. A very short period back few would have believed in the possibility of obtaining such results in the brick-yard as he has effected by means of steam and machinery, thus fully justifying the award of the Royal Agricultural Society at Chelmsford, and maintaining the proud position he so deservedly acquired in France, where he gained the golden medal of honour.

STATISTICS OF AGRICULTURE.

Is it possible by any means, gentle or simple, to obtain the statistics of agriculture? Here in England we answer it is not. Any such a proceeding would be altogether at variance with our national character—inquisitorial, unnecessary, and useless. At least so say some of us; and the Government, always ready "how not to do it," is quite willing to be satisfied with such an assurance. To be sure their own official experience is all the other way. They pick out the most likely men for committees, they have the best evidence, and they read, as founded on this, the most favourable reports. The thing ought to be done, and at any rate should be attempted. The interests of the country require it. Strange to say, however, there are some obstacles to be encountered, and some prejudice to be removed. This is, of course, enough. An energetic gentleman declares it shall not be done, and the Government meekly echoes that it cannot be done. And so agricultural statistics are conveniently dropped—to be talked of hereafter amongst the many other "good intentions" that unfortunately could never come to a harvesting.

But is the collection of Agricultural Statistics an impossibility? We repeat the question. Can so important a subject be thus conveniently disposed of, simply at the word of the honourable member for Huntingshire? Would it really ruin the farmer to supply them, and would the country break into open rebellion if we asked him? We are indignantly assured that it would. No matter therefore to the rulers or the people what we produce or what we want. It must palpably be better for everybody, to keep us all in doubt and uncertainty; and to continue the market at Mark Lane as much a hazardous speculation as the prices on the Stock Exchange, or the "business" at Hyde Park Corner.

But is it possible to have Agricultural Statistics? It is. Despite the threats of the honourable member for Huntingshire, notwithstanding the hasty retreat of the Government from the attainment of such an object—Agricultural Statistics are to be obtained. The very powers, indeed, that so sadly confess they see it is not practical are at the same time complacently receiving ample proof that it is. In this United Kingdom of ours, while we sagely decree in Parliament assembled that the scheme cannot but be abandoned, we know full well that "in another place" it is being successfully carried out.

The Tweed does not so widely separate us, nor so utterly distinguish our manners and customs, but that what would hurt an English farmer would promise equally to injure a Scotch one. And yet in another part of our magazine will be found an admirable return of the Agricultural Statistics of Scotland. We especially request our readers to peruse it. Arranged as it is the comparison alone of one year with another is of itself a matter of much interest. Beyond this, it is a fine commentary on our own proceedings. Here are the statistics of Scotland. And how arrived at? Many an infuriated Highlander is now doubtless retreating into his own fastness, ready to do or die ere he again puts his hand to such a paper. Alas! for the decay of all proper spirit must it be recorded that not a man in Scotland has refused to supply what was required of him. And is he ruined? Are the home-truths of his hearth exposed? Let the returns and Mr. Booth furnish the reply. If his "neebor" has more wheat and less fallow, the Laird would know it without the need of this paper. While as for Mr. Booth and ourselves—the public that is—what care we, so long as we know how the whole country progresses, whether M'Dougal stands better, or M'Donald worse!

Are Agricultural Statistics impossible? We take this well-mapped page as a fine argument against any such a showing. But, then, what are we to do? Who is to rise to reply to the honourable member for Huntingshire? Shall we really have to take Mr. Hall Maxwell from "another place," and to have him bodily before us to tell how all this has been done.—That the farmers are not ruined, that the returns are not inquisitorial in their effect, that the country is not in rebellion; but that collection of Statistics is just possible, because—it has just been accomplished.

ON THE GROWING IMPORTANCE OF WATER FOR AGRICULTURAL PURPOSES OWING TO THE INCREASING FACILITIES OF APPLICATION.

If British Agriculture is overlooking her interest in any one department of science at present, it is in the little value she puts upon the liberal supply of water which Providence has given her. Following the example of the "unprofitable servant," she disposes of this "talent" accordingly, and when harvest comes, says to the Giver and those depending on Him for bread—"*Lo, there thou hast that is thine.*" There is no great consolation in this to the hard-working millions of this country, now supporting an expensive and bloody war under grindingly-high prices. Had the "talent" at issue been honestly placed "into the bank," there cannot be a doubt that the national expenditure, public and private, would have been some £50,000,000 annually below its present rate, while an amount of starvation and misery, which Heaven only knows, would have been avoided. In Egypt, it appears, the supply of water has this year failed, and hence the usual produce of corn. Throughout the East, oriental farmers are familiar with the importance of water for arable husbandry as well as pasture, experience and tradition having handed down to modern times the necessity of its use, with the fact that the greatness of the Assyrian, Babylonian, and Syrian kingdoms depended upon the successful husbandry of water, for bread corn as well as culinary vegetables. We, on the contrary, confine its use almost exclusively to the irrigation of grass lands, following, no doubt, also the practice and tradition of our Celtic and Saxon forefathers, whose predatory and warlike habits in some measure compelled them to adopt the pastoral system, while their moist climate enabled them to grow the scanty supply of bread-corn their wants demanded. But loaded as our climate may be with moistening dews and rains, our lands often suffer from drought, falling far short in harvest of what they would yield with a proper supply of water; and although properly-drained lands are not so liable to be burnt up as they were in their original state, nevertheless more effective drainage and improved systems are calling for a greater supply of water than experience is yet familiar with, or willing perhaps to acknowledge; for even on grass lands, how little does wealth so unmeasured increase our national income!

In order to enforce the soundness of this conclusion, let us glance very briefly at the chemistry and economy of water, confining our observations to an agricultural view of the subject.

Pure water is composed, as our readers are aware, of two elementary substances—oxygen and hydrogen, in the following proportions, viz., eight pounds of the former and one of the latter, making nine pounds of water; or one gallon of oxygen and two of hydrogen make three gallons of water. In a separate form the two are only found in a gaseous state, and, like common air, are without colour, taste, or smell. But although similar in this respect, they are yet very different in their chemical natures; for a burning taper plunged into a receiver filled with oxygen burns with great brilliancy, or the vital functions of animals are stimulated in a similar manner, the circulation being greatly increased; whereas the reverse is the case with hydrogen, the burning taper being extinguished, and animals ceasing to breathe the moment they are introduced into it. If in contact with the atmosphere, however, hydrogen burns with a pale yellow flame; and if with a mixture of air or oxygen, with a loud explosive noise, during which water is formed. But singularly opposite as the two gases are from each other, yet much of the value of water depends upon such characteristics.

Of water, a healthy plant requires a large supply to bring it to maturity. This is obvious from the large per-centage crops contain when in a green state, amounting to from 80 to 90, as will be seen from the following tables, and also from the amount evaporated. Experiment is yet wanting to solve this question satisfactorily; and were such obtained, it would prove that water, judiciously applied to the soil, is second to none of our more favoured fertilizers. Hales, for example, found that a sunflower 3½ feet high lost from its leaves during 12 hours of one day 30 ounces of water. How much did it lose during the whole period of its growth?

A thousand pounds of the following substances, in the state they are usually given to cattle, or are used for other purposes, lose each the quantity of water appended to its own weight when dried at 230° Fah.; viz.:—

1000 lbs. of	Wheat	lose	166 lbs.	of water.
,,	Oats	,,	151 lbs.	,,
,,	Peas	,,	86 lbs.	,,
,,	Cloverseed	,,	112 lbs.	,,
,,	Hay	,,	158 lbs.	,,
,,	Aftermath hay	,,	140 lbs.	,,
,,	Red clover hay	,,	210 lbs.	,,
,,	Turnips	,,	925 lbs.	,,
,,	Potatoes	,,	722 lbs.	,,

Green pea stalks again contain 80 per cent. of water, red clover 76, white clover 80, lucerne 75, spurrey 77, buckwheat 82·5, common vetch 77·5, and French vetch 79·5 (*Johnston*).

Again, water enters as largely into the composition of animal substances as of vegetables, flesh containing no less than 77 per cent., fish 80, blood 79 to 83, skin 58, bones 14, and wool, hair, and horn 9 to 11.

It will thus be seen that water is largely used by animals and vegetables, no less than three-fourths of their whole weight being composed of it, and even as much as nine-tenths of the weight of plants at an early stage of their growth; and this large supply is absolutely necessary to a healthy vitality; for if they do not receive it, they become stinted in their growth, arriving at a forced maturity before they have perfected their parts. The rapidity, on the contrary, with which they grow when properly supplied with heat, moisture, manure, and air, is often very remarkable ; and could we see with the eye the process of absorption by the roots, stem, and leaves, on the one hand, and the discharge of water and gaseous matter from the surface of the same, on the other, in such occasions ; and were we also able to see the work of assimilation going on, it would doubtless illustrate in a very convincing manner the important part which water plays in the process of vegetation, no less than the functions of the several parts of plants themselves, at present far from settled questions.

But, although we cannot see the several parts of plants performing their respective functions, we do know, nevertheless, that water holding in solution both organic and inorganic elements, is absorbed by them. It has long been an established point in science that every plant is a separate laboratory, in which Nature performs her annual routine of chemistry. Take the turnip plant for an example, the successful cultivation of which is now universally acknowledged as the leading characteristic of improved husbandry.

Now, a turnip requires a dry soil, but a regular supply of heat, air, manure, and moisture. Cold, rainy seasons it dislikes, or even a long continuance of warm, rainy weather, filling the pores of the soil full of water, to the exclusion of the free circulation of air. If the atmosphere is warm and moist, and the plant fairly started, it will imbibe water freely from this source. Cover a dry bone, for example, with an inch of mould ; cover your seed, and supply it with water until fairly started ; and then, if the weather is not scorchingly dry, it will manufacture water for itself, keeping its bone and roots matted around it liberally supplied with water, so wet every morning that you may perceive frothy-like drops standing, and the soil moist around, as if you had poured a pint of water upon it.

Without entering here into controversy with vegetable physiologists, who deny the excretory functions of the roots of plants, we may safely direct their attention to the above experiment ; for there cannot be a doubt that water is here excreted, holding in solution some acid in a very dilute form, which acts upon the bone.

In a similar manner, water, with the aid of acids and alkali, acts as a solvent for the solid food of plants. Carbon, for example, amounting to nearly half their dry weight, by combining with oxygen (carbonic acid) becomes soluble in water. This carbonic acid again unites with alkaline bases, such as potash, soda, lime, &c., forming carbonates capable of being dissolved in water. In a similar manner, magnesia, iron, phosphorus, sulphur, chlorine, and silica—the inorganic elements of plants —are dissolved by means of acids, and taken up into their vascular system through the medium of water.

Again, in the form of vapour, dew, rain, and snow, it absorbs nitrogen, nitric acid, and ammonia from the atmosphere, and entering the soil when properly cultivated, loaded with these, supplies plants with their nitrogenous elements.

And besides these, it plays a very important part in preparing the raw materials of food for plants prior to the above processes. It enters, for example, the pores of rock and the minutest particles of the soil, and when frozen expands, breaking up the former, and disintegrating the latter to the more effective action of oxygen, acids, and alkali—in this manner reducing both, in the great laboratory of Nature, to a state more and more easily converted into the living structure of plants ; thus clothing our fields with luxuriant foliage, filling our barns with plenty, and crowning our tables with all the luxuries of the animal and vegetable kingdoms.

Another important office of water is the purification of the soil, through the instrumentality of drainage, either natural or artificial. A large area of soils is liable to become sour. In them salts are found injurious to vegetable life, more especially in certain seasons, when improperly aërated ; and although drainage has greatly counteracted this evil by the removal of stagnant water, on the one hand, yet a change of cropping, with the great affinity of such soils for water, has rather added to the evil, on the other ; so that between the two the gain is less than drainage indicates. Drainage, for example, enables us to grow turnips where previously naked fallowing was obliged to be practised ; but n wet seasons, clay soils, from their great affinity for water, do not part with it : hence they become consolidated, under the operations of horse and hand-hoeing, and when wheat with cloverseeds follow, the result is invariably less or more acidity of soil. Capillary soils, again, bring up noxious salts from the bottom, poisoning the active soil, and rendering it less or more injurious to the health of cultivated plants. Now, when such lands are broken up from clover or rye-grass, the winter rains and frost wash and pulverize them, carrying off the acids in solution to the drains ; and when broken up the following winter for the succeeding crop, the plough, by being allowed to go a little deeper, washes the soil to its proper depth.

In ploughing up land on such occasions, and indeed on all occasions, the highest degree of artistic skill is required on the part of the ploughman. A very superficial glance at his work will suffice to prove this; for in ploughing for spring-sowing on the furrow-slice, if the work is slovenly done, the washing of the soil will consequently be imperfectly performed. If the furrow-slice, for example, be completely inverted, being " laid flat" on the subsoil, it will gain little benefit from the action of either frost or rain ; on the contrary, if laid at a proper angle, width, and depth, and equally compressed by the mould-board in passing, so as to crack or break it regularly, for the purpose of admitting more freely the circulation of the atmosphere and the percolation of rain or process of washing, the result will be more favourable.

Water, on the other hand, does harm in various ways when present in the soil to excess. First, for example, it carries off heat by means of evaporation, and hence reduces temperature and growth ; second, it consolidates and fills up the pores of the land, excluding the circulation of the atmosphere—and hence the supply of carbon and nitrogen from that source; third, it retards the work of tillage; fourth, produces acidity in soils; and fifth, gives rise to the growth of aquatic and other weeds.

How different is the effect thus produced by water when judiciously applied to the soil, from the contrary when it is allowed to stagnate, as stated in the last paragraph! It may safely be stated as fact that land, if properly drained, will consume all the water which previously drowned it, provided it were economically applied, owing to the extra quantity of produce it would yield, the greater amount of water required to manufacture that produce, and the increase of evaporation from a greater surface exposed to atmospheric influence. The principal solution of the paradox, however, lies in this —that wet lands generally contain their water when it is not required, while they are burnt up during the drought of summer when it is required. The want of economy here is great, and the loss greater still.

Such being the case, it will readily be seen that if the surplus supply of water could be stored up during rainy seasons for the purpose of being applied in dry, so as to keep lands always supplied with a sufficiency of moisture, the result would be an increase of produce not easily estimated, especially on clay lands, extending over a large area of the United Kingdoms. To the possibility of this by means of steam engines we may return very shortly; meanwhile, shall only conclude by distinguishing between water applied in a comparatively pure state, or as artificial rain, and that which is applied as liquid manure on the hose-and-jet system. Now, without raising any question as to the propriety of the latter on grass lands in dry weather, it is unfit for arable lands altogether, and even grass lands in wet weather; while tank fermentation, as at present practised, is not very easily reconciled with practical chemistry. That solid manure should be applied in as soluble a form as possible to the vast majority of soils will readily be granted, and if it be applied in this form to land sufficiently moist for vegetation, it will be dissolved as fast as the roots of plants can consume it; whereas if the land be kept in this favourable state of moisture, as it always should, then to drench it with tons of cold water is not only to check vegetation, but either wash away manure or sour it so as to make it unwholesome food. Gardeners in forcing plants know full well, from experience, how nice a question the most profitable degree of aëration, moisture, and heat is; and this is just what farmers must also become experimentally acquainted with.

RICK YARDS.

A rick yard is a space of ground enclosed, for the purpose of containing the crops of grain, built into round or longitudinal ricks as fancy may direct. The position adjoins closely to the thrashing barn, and a square form is preferred, which admits the rows of ricks to be ranged in two crossing lines. The bottom of the ricks is made with straw on the ground, to prevent the grain being spoiled by touching the earth; the roofs are thatched and secured by straw ropes; and the ricks are thrashed during winter, as the want of straw and grains may require. The rick yard is surrounded by a sunk fence of stone walling, which permits the unbroken currents of wind to sweep among the ricks with blasts of fresh air, and prevents any heating from a damp or undried condition of the strawy grains. This proviso of a sunk fence marks the rick yard for the special purpose.

Thrashing machines, that are impelled by horse-power, are provided, with an open door the height of the side walls of the building, into which opening the unthrashed grains are drawn in single loads, by one horse, from the ricks during the days of thrashing, and regularly through the hours of performance. The sheaves are thrown by hand-fork from the cart on the floor of the thrashing machinery, and lifted to the feeding board. This practice has continued since the best forms of horse machinery were introduced, and understands the thrashing power to be on a second floor. When the power is placed on the ground floor, as was the olden practice, and is yet found, the sheaves are carried from the rick into the barn on hand-barrows, and deposited below the feeding-board, to which the unthrashed grains are lifted by hand. When a declivity of ground allows the corn barn to be placed beneath the upper level, the thrashing machinery is on the level of the rick yard, and the access is easy to introduce the unthrashed grains.

An elevation of ideas on the subject of thrashing machinery has raised the necessary buildings to three floors in height; the uppermost containing the working machinery, the second receives the grains separated from the chaff, and the ground floor is accommodated to measure and put the grain into bags, after it has been riddled by hand on the second floor, and passed through the fanners that separate the light from the heavy materials. This arrangement requires the sheaves to be raised to the highest floor by means of a travelling carrier, which receives the burdens from the rick as carried into the barn. Two rows of ricks, with an intervening railway, may be placed to contain the crops of the farm, and conveyed to the barn, as required to be thrashed, on a light four-wheeled waggon, which, when empty, can be pushed by hand along the railway, and when loaded moved to the barn, along a gentle inclination of the railway. The sheaves are placed on a travelling carrier, and raised to the highest floor. A roof of corrugated iron may be thrown over the railway and the ricks, resting on cast-iron pillars, which saves the expense of thatching the ricks, and very considerably diminishes the labour of harvest; and thrashing may be done in any weather, as the whole performance is under cover from rain or wetness.

In this way, the barn will best stand in a corner of the farmery, with which a fence and the rows of ricks will form an extended line. The shape of the rickyard will be changed from a square form into a longitudinal, narrow space, which may be widened in order to contain heaps of turnips and piles of mangel-wurzel. The hay-ricks will be placed to accommodate the convenience of the stable. A long, square form of rickyard will thus be preserved.

A good arrangement places the corn-barn in the centre of the north wing of the farmery, and jutting into the rick-yard in the length and width of the building. The length may be thirty feet, on farms of medium extent, and will give accommodation to much business. The rick-yard will form a square, with the extent of the farmery in the north wing. The railway, with a row of ricks on each side, will extend the whole length of the wing, and pass the end of the barn, to which the unthrashed grain will be conveyed, and raised to the thrashing-floor on a travelling carrier, from the height of the conveying waggon which runs on the railway. When two rows of ricks do not contain the whole grain crops on extensive farms, another railway may be placed exterior to the first, which touches the end of the barn; and when the conveying waggon, loaded with grain, arrives opposite the end of the barn, a lateral branch of railway will carry it to the proper place, after being turned in that direction on a turn-table of the railway. Any number of parallel railways may be thus placed, and deliver the loads where required by means of cross branches from turn-tables; but in most cases one railway will be sufficient with two rows of ricks extending the length of the farmery, or at most two railways for the most extensive farms in the kingdom. Being covered with a roof of corrugated iron, no carting of the grain is required, and an employment is saved in that quarter. The handling of the strawy grains is the least possible, and the conveyance easy and quick to the thrashing machine from the rick of standing.

The position of the corn barn and thrashing machinery that has been mentioned, by which the straw is thrown into the centre of a barn extending right and left of the place of delivery, affords very much convenience in lodging different kinds of straw in separate divisions, and to which an easy access is obtained. The arrangement is superior to the longitudinal position of the machinery, which delivers the straw into the end of the straw barn, and creates more labour in the management and divisions of the article. Inside passages may be contrived from the barn now approved, by which the straw may be carried to the stables and cattle-houses on the right and left, and without travelling under exposed weathers. The straw barn being central in the north wing of the farmery, and the corn barn being central in the straw barn, a door the height of the side walls of the buildings opens from the straw barn into the central road of twenty feet, which divides the cattle yards of the interior of the farmery, and affords a convenience of supplying straws to the yards from the barn, and constitutes an uniform neatness of arrangement and convenience in the centre road and corn barn, forming a line continued through the centre of the straw barn. The cartage of dressed grains from the barn is removed altogether from the interior of the farmery, and avoids much inconvenient traffic, which is in this way performed on the road which leads into the rick yard from the main road of the farm, and conveys the unthrashed grains into the necessary positions. This arrangement of the rick yard, thrashing machinery, corn and straw barns, and central road of the cattle yards, is the most convenient yet devised, and affords greatest possible economy with the least possible labour. It is required that a juxtaposition of articles afford a combined utility, but must be without disturbance and a huddled inconvenience. The work of the thrashing of grains, and of the barn, must be wholly outside of the interior of the farmery, which in the cattle yards receives only the straws and chaffs for litter after separation from the grain. No other labour comes inside.

The ricks of grain may be placed on four-wheeled platforms, which stand on short branch railways, at a sharp angle of divergence from the main trunk. The entire rick is moved along the railway to the barn when wanted to be thrashed, and the empty platform is returned to its place, to receive the rick of next year. The standing of the ricks singly off the main railway affords the necessary choice of the rick to be thrashed, and two ricks may stand behind each other on the branch railway, when the same kind of grain do not require to be separated. It has been objected that the movement of a heavy rick is inconvenient, and may be dangerous; but the weight is only a few tons, and the declivity of the railway must be formed to suit a slow motion, and to stop at the proper place. The whole operations are under the cover of a roof, and all expense is saved of thatching and carting the ricks. The rick being conveyed on the railway to the end of the barn, one hand is required to place the sheaves on the travelling carrier, which delivers close to the feeding board. The saving of expense will soon repay the cost of railways in these plans of thrashing arrangements.

The constant and general use is understood of steam power for thrashing grains in all notices on the subject, with the machinery fixed on all farms of 200 acres and upwards, as an article of permanent furniture, afforded by the landowner, and kept in repair by the farmer for his current use. The power may be from that of 4 to 10 horses, as the extent of the farm may require. By far the mightiest and most useful power yet given to man has to travel and beg admission as a strolling vagrant into the service of the farmer: it is slowly admitted, and finds a narrow entrance. The merits having been long since proved and admitted, the fixed portions only remain to be done in all the circumstances of its varied application. Thrashing of grains is a fixed performance, and requires only the location of the power. Moveable purposes require more consideration.

THE REAPING MACHINES.

Sir,—No doubt your remarks on the award of the reaping machine judges will be fully answered in the report with which they furnish the Royal Agricultural Society. But the Journal in which it appears will not be published till next year, when most of the interest will be lost. In the meantime I wish to say a few words as a practical farmer on the reaping machines, and their late trial.

You are probably aware that of the four judges at Boxted, two were in office last year; and one of those two was also judge of the reapers at Lincoln. They have therefore had a good opportunity of marking the progress these machines have made. They may have "rung the changes," but they would not be likely to do this unless there was some good ground for reversing their former decisions.

It is naturally argued that from these changes in the prizes there must be some great advancement. But the fact is quite the contrary. Dray took the prize at Lincoln in 1854: for a *precisely similar reaper* he received a prize at Boxted. Last year there was a marked progression. The judges reported with satisfaction that "considerable advance had been made" since the meeting at Lincoln. This remark applied principally to Burgess and Key's machine, which worked beautifully at

Mr. Miles's. The same could not be said of it at Boxted. From some alteration or misfortune it has *lost ground*. Crosskill was nowhere at Leigh Court. His steerage was bad, and the draught excessive. That he has in a measure reduced, and improved his side delivery, so that he now stands A 1. Still the work performed at the adjourned trials in 1855 was *infinitely better* than that of 1856. Any one who was at Leigh Court would say that Burgess's work there (which Mr. Hammond thought was "very nearly perfection") was much better than anything Crosskill did at Boxted. There was no direction from the society this year about a side delivery; so Palmer took nothing for his Union, and Dray walked into his old position.

To judge from the quality of the work performed (and I suppose judges go by what they see, not by what they hear or previously know), the reaping machines *have gone back*. It would be worse than foolish for the judges to mislead the public. As farmers, they were naturally vexed at the result of the trials, and stated "with regret that very little improvement had been made since last year." They might with truth have said much more. What they ventured to observe is considered "too hard in its tone."

You say, "according to all reports the implements at Boxted worked very well indeed." Now, what do I read in a country paper they did on the trial day? First, they were tried on a fine field of wheat. It was a splendid crop, only partially lodged, not half so bad as some at Leigh Court last year. Four plots were cut out: Dray was fortunate enough to have the best. He could work all round; and with this advantage he reaped 1 a. 2 r. 27 p. in an hour and forty minutes. Burgess and Crosskill cut only one way, and had to return empty. There was no reason why the latter should not have worked across; but the machine is difficult to turn. It took Crosskill two hours and five minutes to cut 1 a. 2 r. 23½ p., and Burgess an hour and fifty-three minutes for 1 a. 1 r. 16 p. This trivial amount of work was *not really well done* by any of the machines save Dray's. The superiority of the Boxted scythes, which cut the roads for starting, was very marked, and the men had to *trim up the reapers' stubbles before the steam plough*. Across the ridge-and-furrow wheat Crosskill could not go, but in the oats he flourished. The other machines stopped, and muddled in the laid spots. On the lodged barley all failed. But few practical men would have joined with the newspapers in their "very well indeed."

After what the judges reported last year, it was not for them at Boxted to consider if there was any reaper "fit for use." Having stated that nearly all the reapers at Leigh Court "were capable of cutting and delivering ordinary crops of corn at least as perfectly as the mowers' scythe,"* it was now their chief duty to mark the progression of the last 12 months.

Reaping machines are not new. It is just *thirty years ago* since the Highland Agricultural Society gave a prize of £50 to the original of Crosskill's reaper. It was considered "fit for use" then; but thirty years have not made it perfect. Dray's compact, comparatively cheap reaper will seldom average a cut of more than 4 ft. 3 in. For this two horses and two men are employed. Surely here is no great triumph of mechanical skill, or any grand result for the labour employed. Mr. Hammond says it cuts an acre in the hour. It must move pretty briskly to do this when taking a breadth of only 5 ft. 3 in. It may be an implement of "practised utility," but I believe that, till the last fortnight, there was not another reaping-machine within twenty miles of Westacre. One of the judges of implements at Lincoln there bought Dray's prize machine: unless he has altered his mind, he is not using it this harvest.

In another portion of the *Mark-lane Express* is an account of Burgess's reaper cutting twelve acres of wheat in the day, at Heybridge. I believe it did this, and did it easily; but I cannot believe what follows, viz., that mowing these *twelve acres is equal to the work of thirty-six men*. What a libel on the Essex labourers! If the crop was not of extra size, I will engage to find *eight men* on any large farm in West Norfolk that would mow these *twelve acres in the day*. In the old reaping times a man could cut, bind, and stock his half-acre. My harvest-men, in standing wheat, always take a swathe of *six feet* and mow an acre and a half in the day. A woman and girl tie this, and are paid 3s. Supposing the man's wages to be 5s. per day, that is not 6s. an acre. I began and finished my harvest last year in twenty working days, and, notwithstanding all the wet weather, I hope to conclude, this year, within the month. We might as a county learn something from other localities, and cut our wheats before they are fully ripe; and other counties might learn from us, when labour is scarce, to substitute the scythe for the reap-hook.

As a practical farmer, I had no difficulty in understanding the meaning of the judges' award. If I wanted a machine "for general harvest purposes"—for cutting wheat, barley, and oats—Crosskill's and Burgess's are the ones. If I required a machine solely for wheat, then Dray's is the best. It is a "reaper only": it sheaves the corn ready for immediate binding. This may do for wheat, but not for oats or barley.

It is a fallacy to suppose that "clever men, like the makers, in watching each other, have all gradually crept on to something like equal ability and perfection." These really clever makers are too sharp for each other. Should any of them discover an improvement, it is not exhibited till secured by a patent. The tipping, radiating, screw-delivering, and endless banded platforms, are all patented; while our American brethren put on such a royalty for their knives as almost to amount to prohibition. Still there are parts of the mechanical arrangements that it is wonderful some makers do not copy. Burgess's knife has a stroke of 5 inches, Dray's has only 2½. One must be wrong; and the dynamometer tells us that the long stroke is right.

Under another head the reaping-machines do not improve. The large ones cost £40. They could be made for very much less. But Mr. McCormick charges a royalty of *seven pounds* on each machine: so that's how some of the money goes. I understand at the Bath and West of England Show, at Yeovil, there was an £18 reaper made by Bowhay, of Modbury, Devon. Though it took quite as much ground as Dray's, it worked at the trial with only *one horse*, and cut capitally. It had the first prize, Dray's the second.

Although we are not likely in this part of Norfolk to urgently feel the pressing wants of a reaping-machine, I should be indeed glad to know of one anything like perfection. It would materially assist us, and indeed be valuable in some districts. I this week saw a letter from the neighbourhood of Ely, in which a large farmer complains of the scarcity of labour, and says, "We feel the want of a really good reaping-machine more every year." This gentleman has been a judge of the Royal Agricultural Society; and, if he saw anything useful, would not hesitate to avail himself of it. But I fear, where machines are most wanted this year, they will be of little use. In the Fens the corns are all, more or less, lodged; the reaper could not work there.

The judges' award is condemned for its "Delphic character." I am not well up in ancient history; but I always thought the Oracle spoke most cautiously. But the judges seem to me not to have been cautious enough. They have spoken truthfully, and therefore offended. They say there has been but little advancement in the last twelve months, and they tell the farmer which machine will suit his different harvest operations. They cannot state that one is yet so perfect that it will do every thing well.

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* Journal R.A.S.E., vol. xvi., page 528.

The implement makers may be angry, and the public may be disappointed, but the farmers of England will be obliged to the judges for having fearlessly performed an unpleasant duty, and spoken the honest truth. I am, sir,

Your obedient servant,

WEST NORFOLK.

USE OF REAPING MACHINES.

TO THE CHAIRMAN OF THE JOURNAL COMMITTEE OF THE ROYAL AGRICULTURAL SOCIETY.

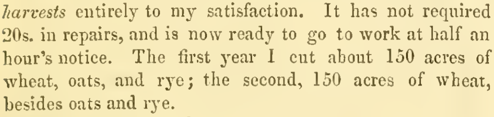
SIR,—You ask me to give you my experience of the reaping-machine; I have great pleasure in doing so. I think I may fairly say that it has now attained that degree of perfection which entitles it to be classed amongst implements of real practical utility.

On the first introduction of the reaper to the notice of our society, I purchased one by Hussey, which, being faulty in its construction, was soon laid aside.

At the Lincoln meeting I purchased an improved Hussey by Dray, with tipping-board. This I have used for *two harvests* entirely to my satisfaction. It has not required 20s. in repairs, and is now ready to go to work at half an hour's notice. The first year I cut about 150 acres of wheat, oats, and rye; the second, 150 acres of wheat, besides oats and rye.

When I first used the reaper, I thought it expedient to divide a field into portions of about 10 acres, to facilitate the operation of tying and shocking, but this I afterwards found unnecessary; the measure of work to be done being the *quantity cut*, not the distance travelled by the machine. The amount of a day's work by the reaper may be estimated at not less than 9 or 10 acres: I have often exceeded 11. To accomplish this, from 8 to 10 women are required to tie and shock the corn, and one scythe (an inferior hand) to mow off the corners, which enable the reaper to continue its work without pulling up at the ends. The price of labour varies in different districts; with me, last year, the cost of cutting stood thus:—

	s.	d.
The man who works the machine	5	0
The driver, a boy...............	2	0
An inferior hand, with scythe ..	2	6
Ten women, at 1s. 8d............	16	8



The tyers are thus placed, 1, 2, &c.: unless the crop is very stout, eight women will tie ten acres.

11, the scythe.

If a field from 2 to 3 furlongs in length, I should recommend two scythes. Their work is not given away, as the reaper will do its 10 acres, and what these men do will be in addition. Each scythe will tye up its own work.

It may appear that to tie an acre of wheat is a great day's work for a woman, especially as in mowing we allow two women to a scythe; but with a well-worked tipping-board the sheaves require no gathering, they only need binding, and they are laid so level that you have fewer sheaves to an acre than when mown. Be it also remembered that where there is no gathering there is little scattering, and scarcely anything for the horse-rake to do.

There is, I am aware, a strong feeling amongst some of those who take an active part in the implement department of the Royal Agricultural Society in favour of the side-delivery. For mowing corn that is to lie upon the swathe, it is absolutely necessary; but for corn that is to be tied up I prefer the back-delivery, for the reason I have given before—that where there is no gathering there is no scattering.

I hope to go to work next harvest with two Hussey's stern-deliveries, and one Burgess and Key's side-delivery. The mowing of barley by the latter at Mr. Miles's, last year, was very near perfection.

Westacre, May, 1856. ANTHONY HAMOND.

Note.—I should strongly recommend all parties using reapers to have a spare set of knives ready for work; for should any accident happen, it is a serious business to have half-a-dozen hands standing still while damages are repairing. The bar, on which the knives are placed, is the only point where I have had a breakage.

USE OF REAPING MACHINES.

TO THE SECRETARY OF THE ROYAL AGRICULTURAL SOCIETY.

Stanwick Park, near Darlington.

DEAR SIR,—Feeling sure that you will be pleased to learn that the reaping machine to which the first prize was awarded at Bristol, by the Royal Agricultural Society, fully bears out the high opinion entertained of it by many who witnessed the trials at Leigh Court, I have taken the liberty of forwarding to you the copy of a report given by Mr. Parrington of trials on his farm of Lazenby, at Stockton-on-Tees. Every one who is acquainted with him will attach much importance to his opinion, in consequence of his great intelligence and practical experience in the use of reaping machines. I remain, &c.,

J. Hudson, Esq. —— JOHN WOOD.

Lazenby, Redcar.

Having had Messrs. Burgess and Key's McCormick's reaping machine at work on my farm for several days, and operating upon a variety of crops, I have much pleasure in expressing my entire satisfaction with its performances.

I have cut with it autumn and spring-sown wheat, varying in yield from 32 to 40 bushels per acre, some of it much lodged; also a very heavy crop of oats, so much laid and twisted in parts that I thought it impossible for any machine to cut them at all.

One pair of horses worked the machine easily day after day. They have to travel no faster than the ordinary ploughing-pace, and a boy of fifteen managed them without any difficulty.

The machine is so constructed that there is very little wear and tear going on. It delivers the cut corn in a beautiful swathe, laid so straight and lightly on the ground that the sheaves are quickly gathered up; the swathe is evenly cut, and left particularly clean.

I found that the machine will cut in the manner I have described from $1\frac{1}{4}$ to $1\frac{1}{2}$ acres per hour; it is always cutting its full width, viz., 5 ft. 8 in.

I have had great experience in reaping by machinery, and I can honestly say that Messrs. Burgess and Key's machine is on the whole by far the most perfect and satisfactory implement I have seen.

THOMAS PARRINGTON.

—Journal of the Roy. Agri. Soc.

THE AUTUMN MEETINGS.

The agricultural orator can scarcely be said to flourish in full force until what may be called the autumnal meetings. However good may be any earlier gathering in other respects, the speech-making rarely reaches that average to be met with on later occasions. We have heard, certainly, many complimentary toasts, and as many sparkling effusions. We have drunk to our foreign visitors, our railway companies, and our local authorities. We have done all this in the best spirit, and with the highest possible regard for each other. But we have had very little sober practical talk about farming and farmers. We must do Lord Portman the justice to say that he spoke more to the point than any of those who followed him at Chelmsford. The Lord-Lieutenant, too, was well prepared at Athlone. Beyond these, as far as English farming and farmers are concerned, there has been very little but what we might have honestly struck out of our columns. From, what the Paris meetings may result in—beyond, all railways have done for agriculture—further, than the liberality of the worthy Mayor and the exertions of the home committee—have we not a little to say about ourselves. How English farming is faring, and how landlord and tenant are behaving towards each other?

We have. The autumn meetings may be said to have commenced. We give our own report of the first of them in another column. Beyond the success of the show itself, the after-dinner addresses appear all to have fully sustained that character we associate with this season of the year. The chief of them, at any rate, go immediately to the point. The noble Lord, and those next called on, each in his turn took readily to what farmers are doing, and how farming is progressing. We can well afford to compliment them on the feeling with which they did this. It has been far too much the fashion to convey—perhaps somewhat indirectly—the idea that the English tenant farmer has advanced rather against his will, and that if agriculture has improved, it has been more from the exertions of some extraneous power than of his own individual efforts. It is not worth our time to further combat any such impression; but it is right to add that one class at least, the landlords of Lancashire, do appreciate the conduct of their tenantry.

"It was impossible to forget, and he thought it would be a great injustice to the tenant-farmers of this country if we did forget, that very recently they had been exposed very suddenly to universal competition; and that sudden exposure to competition had occurred at a time likely to try the energies of the whole country. What had been the peculiar circumstances in which the agriculture of England had been exposed to the competition of the world? We knew what steam had done within this country itself to equalize its markets. We knew that the corn of Lincolnshire and the west was brought with the greatest possible rapidity and the utmost cheapness to the markets of the manufacturing districts. But we also know that the corn which was grown upon the virgin soil of the forests of America, and the unexhausted treasures of the inexhaustible soil of Hungary, and the produce of the alluvial deposits of the Boug, the Dnieper, and the perpetually renewed alluvial soil of the Nile—all this was likewise brought to the markets of England, to compete with our own produce. Instead of being disheartened, however, with the position in which they had been placed, neither the proprietors nor the tenant-farmers of England had given way in any respect to despair. They had put forth manly and vigorous efforts, and, while the science of agriculture had probably made a greater advance in the last 15 or 20 years than it had done in many centuries previous, he gave expression to his earnest conviction when he said that—speaking either of the proprietors or the tenant-farmers—no class of the community had put forth more energetic exertions than the agricultural class during the last ten years." So said Sir J. Kay Shuttleworth at the Preston meeting on Thursday last. No one can deny but that the argument is well put, and the deduction as honestly arrived at. The farmers of this kingdom had to face a hard trial, which if it were easier than was expected, was entirely attributable to the indomitable spirit with which they awaited a turn in their favour, in no way promised nor provided for.

Lord Stanley, the chairman of the day, without dwelling so much on the difficulties encountered, appreciates as fully the improvement which has been achieved. His Lordship, however, regards this only as a prologue, and the point of his speech, like that of Oliver Twist, is "asking for more." We want more drainage, because "what has been done is a mere trifle to what wants doing." We want more home-saved manure because "the British farmer is paying every year a million and a-half for artificial manures." We want more machinery because, though "nothing is more striking than the advance which has been made in this direction during the last fifteen years, this is a foretaste only of what will be accomplished hereafter." We want more statistics because "the farmer himself will gain by knowing a little more about the state of the markets." And, we want more education because "agriculture within the last few years has risen to the rank of a science." In fact, the more we have done the more there is to do.

The work, however, must be honestly divided amongst us. It is not the tenant we have to look to to do everything. With regard to the saving of sewage manure, for instance, "I am not saying it is for the landlords or for farmers in this matter to take the first step. They cannot lead; they must be content to follow; they must wait until chymical science has made that easy which at present is difficult, if not impossible." Then, again, with machinery, "as in the case of manure, I admit that in general the farmer has a fair right to say it is not he who is called on to try experiments. It is, however, in this case, very much the landlord's business; and I know of no way in which a man of large fortune, and with a disposition to render that fortune available for the public benefit, can better employ it than by large and liberal investments in all such machinery as appears likely to promise success." As to drainage, we will undertake ourselves to answer for his Lordship, and say the less the tenant has to do with it the better. His capital is wanted for other purposes; and if his landlord cannot do it, the public will. We look on this as a settled point, that only requires a little further development.

The English farmer then is doing his duty. He is making the most of every available opportunity that opens to him. If he does not, perhaps, rush headlong into every scheme and experiment that is propounded, the greater, and, very literally, the greater to his credit. He has been the first still to test a good many. If he had waited only for his landlord or others to try every implement, and estimate every manure, we hardly know where he would be, or what would be said of him now. Render sewage manure profitably available, and he will use it. Invent more machinery that will answer, and he will buy it. Put land into a better condition, and he will pay more for it. After all, it is not so much what the farmer is doing, but what other people are doing for agriculture. What is the Government doing? what are the landlords doing? what is science doing? We are ready enough to watch the baton that shall wave us on to further triumphs. But with the hand that holds it, must in many matters be the initiative. The speech of my Lord Stanley was a suggestive and a sanguine one, but it was equally an honest one. Under such auspices the Autumn Meetings have opened well. Proverbially, no man has such a multitude of counsellors as the farmer; but let each one of us consider what he has himself to do, in promoting the good work.

THE TRADE IN EGGS AND POULTRY.

Michaelmas is at hand, and the metropolitan dealers are on the look-out for the purchase of fine weighty birds for their customers. Christmas will be at our doors ere long, and we shall have to import no end of additional eggs and poultry to supply the two-millions-and-a-half of mouths congregated within the circuit of a few miles round St. Paul's. The trade in eggs and poultry is too much supplied from the Continent. Ireland has done something to meet our wants, but Scotland does little or nothing in this department of rural economy. The large profits made by many of the breeders of poultry for the London markets, in the contiguous counties to the metropolis, is enough to stimulate the small farmer, the cottager, and the careful housewife with her children to look more after the eggs and chickens.

A paper by a lady, read before the Newcastle Farmer's Club, and published in the *Farmer's Magazine* some time ago, on the importance and profitableness of poultry, showed on very clear evidence that poultry repays for its keep, and leaves a large profit in the hands of the producer and dealer, and yet a sufficient supply for the consumption of our markets is not raised throughout the country. The fact can only be accounted for by the prevalence of ignorance as to their profitableness; or why are we indebted to France, to Holland, and Ireland, for more than half the poultry and eggs we consume every day? If a systematic plan of rearing and feeding be adopted, and proper yards and houses provided, poultry may be made a valuable part of the produce of the farm; they always find a ready market, and are produced at little cost.

In England and Scotland fowls and domestic poultry generally are not noticed in the returns of live stock. One might suppose from this, that eggs and poultry were altogether ignored; and that the feathered bipeds we see in our farm-yards, or grazing on the commons, were kept rather for amusement than use. An examination of the loaded stalls of Leadenhall and Newgate Markets, and of the Board of Trade Returns, will, however, tell a different tale; and, dear as fowls, ducks, and eggs comparatively are, they meet with an enormous and ready sale. When we find our imports of eggs amount to 130,000,000 a-year, besides our nominal "new-laid" or home produce—when we find that the foreign poultry we receive (mixed up with not a few Ostend rabbits) is valued at £39,000—that the trade in feathers in the kingdom amounts to nearly 700 tons, worth about £58,000—that France sends us about 106,000,000 eggs a-year, and Ireland about 150,000,000 a-year;—we begin to see that fowls, ducks, geese, and turkeys, must be a profitable investment to some persons; and the capital of £4,000,000 we lay out on their various products—flesh, eggs, and feathers—must gladden the hearts of many a poultry-breeder. The rearing of this small stock of the cottage and the farm would certainly not be carried on if it were an unprofitable speculation. Seeing, then, that it proves remunerative on a small scale, that it even pays to ship this produce from far distant quarters, occasionally from Egypt, Algeria, from the Peninsula, and from America, with all the extra charges and additional risk, why can it not be conducted profitably on a more extensive scale in England?

We are no advocates for a poultry mania and the propagation of mere novelties, whether in the shape of ornamental birds or great unsightly bipeds. But the production of good, serviceable, meaty birds, capons and ducklings and geese and turkeys, that shall have wholesome flesh upon their bones, and will serve to cut and come again upon, is what we desire to see more attended to.

With butchers' meat ruling at a very high price in towns, a poultry-breeder on a large scale might try his hand at the comparative cost of keep, and see whether he could not increase the supply and lower the price of a good chicken or barn-door fowl.

We may not be quite so prodigious devourers of eggs as our French neighbours, having a greater abundance of solid animal food and fewer fast days. Another reason is, that we cannot, like them, get them so fresh and cheap; but, as an alimentary substance, eggs are always in demand at a ratio proportionate to the prices at which they can be obtained. In Paris the consumption of eggs is at least 175 per annum to every head of the population. In the rural districts it is more than double that amount; eggs entering into almost every article of food, and meat being scarce and dear. If we only use in London half the number the Parisians do, there must be a sale of about 173 millions a-year; and the consumption through the kingdom must be fully 2,000 millions.

The fifty or sixty wholesale egg merchants and salesmen in the metropolis, whose itinerant carts are kept continually occupied in distributing their brittle ware, might probably enlighten us as to the extent and increasing character of the trade, and the remunerative nature of the profits. Railways and steamers bring up huge crates and carefully-packed boxes of eggs for the ravenous maws of young and old, who fatten on this dainty and easily-digested food. The City markets dispose of two millions of fowls, one million of geese, half a million of ducks, and about 150,000 turkeys a-year. But even if we double this supply, what are they among the two millions and a half of souls requiring daily to be fed?

The following paragraph from the Paris correspondent of an American paper, tells how they manage these matters in France. Horse-flesh, considering its now many uses, must rise in the market:—

"A Mons. de Sora has recently discovered the secret of making hens lay eggs every day in the year. He feeds them on horse-flesh; and obtains his supply of twenty-five or thirty a-day among the used-up hacks of the city. His *hennery*, a few miles from Paris, has furnished about forty thousand dozens of eggs a-week, at the rate of six dozens for four francs, yielding the proprietor for every seven days the round sum of 5,000 f, or 260,000 f. a-year. Mons. de Sora employs about one hundred persons, mostly females; and his entire expenses are only about 75,000 f. a-year, leaving him the handsome balance of 185,000 f. profit. He never allows a hen to sit, and all his chickens are hatched by steam. The eggs are arranged upon shelves and covered with blankets, and each morning a swarm of chickens are taken to the nursery."

From 480,000 or 500,000 farms, it is estimated that there are not sent to market more than nine or ten million heads of poultry in a year to supply the whole population of the United Kingdom, shipping and all, which is not more than one-third of a fowl to each person once a-year. Now, were every one to have a fowl as part food once a month, it would require 330,000,000 more fowls or other poultry than are at present produced. When we know what has been done by the farmers and breeders in the extended culture of grain and root crops throughout the kingdom, and in the improvement of cattle, there is no reason why some little more attention should not be paid to the rearing of poultry.

POTATO TOPS.

Dear Sir,—Early dwarf, frame, or short-bladed varieties of potatoes, are generally saved from the prevailing direful disease, if it is dry and hot sunny weather after the blight sets in, scorching or starving the fungus or contaminated sap in the leaves and stalks, and such we think we may venture to say are safest left to chance. It is, however, too well known, to need any further comment, that our practice is to *cut off* (not pull up) the potato stalks, when *luxuriant* crops are attacked with blight, in order to bleed, as it were, the roots, and to save the tubers from further decay. To pull them up is to kill the plants instantaneously, shutting in disease, and subjecting the tubers to decay, and unfitting them for human food. As some persons are averse to this practice, and as it stops the growth of the tubers, we will not press it any further, and only remind our readers, that whether they have recourse to it or not, the blight itself in strong crops stops all further progress of growth in the roots, and it all amounts to the same result at last, except that decomposition takes place very often in the tubers when left to chance, whereas if phlebotomy were resorted to, or the roots were tapped by cutting off the stalks, it would not, and the tubers, though small, would be more mealy, unless such decomposition had really taken place before the operation had been performed.

The *value* of the tops, however, we have taken into consideration this season. Off one rod of a luxuriant crop it will be found that 1 cwt. at least of tops may be cut, or eight tons per acre (we have weighed some) for pigs or cattle, if not to be eaten, may be trodden into a very rich manure, which if taken into account, with the chance of a full crop of savoys, or cabbages, or mangolds, or swedes, to be transplanted between the rows, as soon as the haulm is removed from the potato roots, renders it of no material loss, even if the potatoes at Michaelmas should prove to be small (for let it be recollected, they will be only small, and small they must be, if left to chance after they are blighted; then they may and will be decayed, and no chance offered for savoys, cabbages, &c., being secured, except for late ones, which would be of but little use or value). By forking up the potatoes at Michaelmas it cultivates the land, and prepares it well for the next crop, and if a slight dressing of guano or horse-droppings is applied before forking up the potatoes, the green crops then advancing to maturity will be very much improved, if not the crops next season, and but little if any loss sustained, even if the potato crop were entirely lost.

HARDY and SON,
Aug. 2. Seedgrowers, Maldon, Essex.

P.S. Twenty ears of our best selected and improved prolific red wheat, growing with potatoes, with one foot of stalk to each ear, will weigh ten ounces, and if cut off at the upper joint of the straw, three-quarters of a pound, which, if compared with our weight of 20 ordinary ears, will convey an idea to our readers what our "thin seeding" will do, with judicious management. A. H.

RISE AND PROGRESS OF THE INDUSTRIAL RESOURCES OF THE UNITED STATES.

No. I.

The history of the colonization of the countries situated on the shores of the Mediterranean belongs to antiquity. It was reserved for the moderns to organise and people the new world. During the last three centuries Europeans have planted colonies in almost every part of the habitable globe discovered within that period, but they pursued a line of policy totally opposed to that which was followed by the Egyptians, Phœnicians, and Greeks. The latter founded a colony that it might be complete in itself; the former, that it might be a dependency on the mother country. The ancients civilized the barbarians into whose lands they entered; the moderns have exterminated the aborigines. He who rightly interprets the fables of mythology, sees in the introduction of the three great cultures—the olive by Minerva, wheat by Ceres, and the vine by Bacchus—the nature of some of the benefits which ancient colonization conferred on rude or savage tribes. The worship of Neptune for bestowing the horse on man is traceable to the fact that the animal was conveyed by sea to some distant shore. The moderns have sought for gold, silver, and precious stones in newly-discovered countries, and obtained them from the natives either by force or by the barter of articles comparatively worthless. When ancient Greece colonised the South of Italy, so little jealous was she of the future rivalry of her offspring, that she conferred upon it the title of Græcia Major. Syracuse surpassed Corinth, which had founded it, in wealth and population; and the whole of Sicily was covered by cities more prosperous than any in the mother-countries. In fact, ancient Greece exulted in the growing strength and opulence of the countries it had colonised. With very different feelings has Europe regarded her transmarine progeny. She denied them liberty as long as it could be withheld, and made their commerce subservient to her own. To the last hour she claimed the right of defending them by her arms, and ruling them by her governors. This contrast between ancient and modern civilization teaches an instructive lesson to the young student of history, and is a memorable warning to statesmen. By tyranny France lost St. Domingo, Portugal the Brazils, Spain Mexico and Peru, and Great Britain that portion of the North American continent now known as the United States.

King Henry the Seventh of England granted to John Cabot and his three sons a commission "to navigate all parts of the ocean for the purpose of discovering islands, countries, regions, or provinces, either of Gentiles or infidels, which have been hitherto unknown to all Christian people, with power to set up his standard, and take possession of the same as vassals of the Crown of England." By virtue of this commission, in 1498, Sebastian Cabot explored and took possession of a great part of the North American continent in the name and on the behalf of the King of England.

The first English patent that was given for the purpose of colonising the country discovered by Cabot was granted by Queen Elizabeth to Sir Humphrey Gilbert, in 1578, but it proved abortive. In 1584, she licensed Walter Raleigh "to search for heathen lands not inhabited by Christian people"; and granted to him in fee all the soil "within two hundred leagues of the places where his people should make their dwellings and abidings." He took possession of the district now called North Carolina; and in honour of his virgin queen, gave to the whole country the general name of Virginia. However, the first adventurers perished; and no permanent settlement was effected till the reign of James the First.

During the feudal monarchy of England royal charters were respected in the colonies, and afforded a guarantee for quiet possession to the settlers against the aggression of other European powers. They were also to a certain extent a security against arbitrary encroachments by the mother-country; so much so that, long before the DECLARATION OF INDEPENDENCE, several of the colonies had openly declared that they ought only to be taxed by their own provincial assemblies, denouncing any interference by the British Parliament, in which they were not represented, as a grievance. With the exception of Georgia, all the thirteen colonies formed into States, at the end of the war against Great Britain, had been settled by themselves, and at their own expense, without any cost to the British government, which justified their claim to be exempted from imperial taxation. They flourished in the most extraordinary manner. In Mr. Burke's speech on American taxation, delivered in the House of Commons on the 19th of April, 1774, he spoke of them in the following terms—

> "Nothing in the history of mankind is like their progress. For my part, I never cast an eye on their flourishing commerce and their cultivated and commodious life, but they seem to me rather ancient nations grown to perfection through a long series of fortunate events and a train of successful industry, accumulating wealth in many centuries, than the colonies of yesterday—than a set of miserable outcasts, a few years ago not so much sent, as thrown out on the bleak and barren shore of a desolate wilderness, 3,000 miles from all civilized intercourse."

The New England provinces possessed an active, intelligent, and religious population, among whom prevailed a remarkable love of equality. No large tracts of country were granted to individuals. Farms of moderate size were personally cultivated by their owners. Townships were formed six miles square, which kept the people together, instead of dispersing them over an extended area in small and scattered groups. From the first settlement, great attention was paid to the education of children, who were taught the principles of morals and trained in habits of industry. The New Englanders not only cultivated the soil, but sought wealth on the ocean; and their hardy mariners soon engaged in the whale fisheries in Hudson's Bay and Davis's Straits. In the province of New York large tracts of land were monopolised, so that many settlers became tenants instead of owners, and prosperity was not so great as in New England. Nevertheless, it appears that in the space of fifteen years the population was nearly doubled; for while in 1756 the province contained 83,233 whites, in 1771 the numbers had increased to 148,124.

Pennsylvania, chiefly settled by a frugal and laborious body of Quakers, advanced as rapidly as the New England States. The provincial government was excellent. Perfect liberty of conscience attracted many foreigners who had suffered persecution in Europe. What mainly promoted industry in Pennsylvania was a LOAN OFFICE. The proprietaries of the province sold their lands in small tracts on long credit. Never did an institution contribute more to the happiness of the people or the industrial consolidation of a new country. Each little estate was mortgaged, the owner receiving bills of credit, and with these the land was improved; in short periods the increased produce redeemed the mortgage. The plan is thus described by David Hume in his correspondence with the Abbé Morellet—

> "In our colony of Pennsylvania the land itself, which is the chief commodity, is *coined*, and passes into circulation. A planter, immediately after he purchases any land, can go to a public office and receive notes to the amount of half the value of his land, which notes he employs in all payments, and they circulate through the colony by convention. To prevent the public being overwhelmed by this representative money, there are two means employed: first, the notes issued to any one planter must not exceed a certain sum, whatever may be the value of his land; secondly, every planter is obliged to pay back into the public office every year one-tenth of his notes. The whole, of course, is annihilated in ten years; after which it is again allowed him to take out new notes to half the value of his land."

As a proof of the early prosperity of Pennsylvania, it may be stated that while in the year 1706 it imported goods from the mother country amounting in value to only £11,499 sterling; in 1772 it imported to the value of £507,909—an increase of nearly fifty to one in little more than half a century.

In Virginia, at its first settlement, the Church of England was incorporated with political institutions; and though perfect religious equality prevailed in Maryland when first settled by Lord Baltimore (a Roman Catholic), it afterwards lost that privilege. Hence many were deterred from seeking a new home in those two provinces. This was fatal to their rapid prosperity; for it must be borne in mind that the dread of kingly power and of ecclesiastical persecution was the chief cause of the first general emigration to America. With the exception of Georgia, which received its charter in 1732, all the other colonies had received their charters between the years 1603 and 1688, during which period the great battle between prerogative and privilege had been fought in England. It is known that the popular party triumphed in that contest, and that the principles for which they had contended were identical with those professed by the colonists. Henceforward, liberty struck its roots deep into the American soil, never to be uprooted; and those colonies flourished most where liberty had the fullest and freest action. In the course of time, little attachment to English royalty remained. It was weakened by distance; and the hardship and danger then encountered from a sea-voyage of three thousand miles deterred the vast majority from visiting the mother-country. This deepened the estrangement, but feebly modified by a limited mercantile intercourse. Thus the descendants of the first settlers lost that affection for Old England which their forefathers had cherished; and when the revolution commenced, the inhabitants of the colonies were for the most part the third and fourth, and sometimes the fifth and sixth, generation from the original emigrants. They knew nothing of courts except by rumour; and kings, bishops, and nobles were strangers to them. Among themselves they were all of one rank, and their political creed taught them that all were equally entitled to as much freedom as was compatible with the freedom of others. A vast territory enabled every man to be a freeholder. All circumstances tended to invigorate the principle of individual and national independence, for in the several communities there were no powerful families, no great officers in church and state, no ancestral traditions, no heraldry.

But there was a dark blot on this fair land of freedom. In 1562 the slave trade had been introduced by Sir John Hawkins, who fraudulently transported a large cargo of Africans into Hispaniola; and the rich return of sugar, ginger, and pearls, induced Queen Elizabeth not only to protect, but to share the traffic. This horrible commerce, once established, soon spread itself in all directions, and entered America. "Conditional servitude, under indentures or covenants," writes Mr. Bancroft, "had from the first existed in Virginia. The servant stood to the master in the relation of a debtor, bound to discharge the costs of emigration by the entire employment of his powers for the benefit of his creditor. Oppression early ensued; men who had been transported into Virginia at an expense of eight or ten pounds were sometimes sold for forty, fifty, or even three score pounds. White servants came to be a usual article of traffic. They were sold in England to be transported, and in Virginia were re-sold to the highest bidder: like negroes, they were to be purchased on ship-board, as men buy horses at a fair. So usual was this manner of dealing in Englishmen, that not the Scots only, who were taken in the field of Dunbar, were sent into involuntary servitude in New England, but the Royalist prisoners of the battle of Worcester; and the leaders in the insurrection of Penruddoc, in spite of the remonstrance of Haselrigg and Vane, were shipped to America."

Apprenticed servants in Virginia were only bound to their masters for a term of years, but from this state of subserviency the transition into perpetual servitude was easy; and when the parents became slaves for life, their children were born in hereditary bondage. In 1620, a Dutch man-of-war entered James River, and landed twenty negroes for sale. This is the epoch from which African bondage in the American colonies must be dated, though Sir John Hawkins, as stated, was the author of the slave-trade. For the first time, the Ethiopian and Caucasian races met together, and who can tell the result? The very next election of the President of the United States hinges on this point; and perhaps at no distant date the dissolution of the Union may be the remote and unforeseen consequence of the Dutch importation of Africans in 1620. Mr. Bancroft, the historian of the United States, forcibly and truthfully remarks—"The history of our colonisation is the history of the crimes of Europe."

Some few comments may here be offered on this atrocious system. There was a time when all Europe shared in this criminal outrage against humanity; but as we are responsible for having introduced it into the United States, however we may lament its perpetuation and extension, we ought to be cautious in our censures against those to whom we have left so fearful an inheritance. Barely twenty years have elapsed since we abolished slavery in the West Indies; nor should it be forgotten that we purchased the manumission of the negro: and by thus giving a monied equivalent for the redemption of the slave, we did, in fact, recognise that man had a property in man. Moreover, the twenty millions given to the West India planters was borrowed in the money market, and added to the national debt; so that the humblest among our race of labourers is taxed for the concession of African freedom. This should teach us the difficulty of a similar operation in the United States; and when we cannot heal a wound, it is cruel to irritate it.

We shall return to the problem of slavery and its extinction, when we treat of the value of slave labour measured in the produce of the United States, and will now only add that it is easier to sin than to retrace our steps from sin to virtue.

SHOW OF FAT STOCK IN FRANCE.

We have been requested to call the attention of feeders of stock in the United Kingdom to a show of fat stock, to be held at Poissy. The decree for this "Concours" has been signed by the French Minister of Agriculture, but is not yet published. Upon receipt of the programme, we will give fuller particulars. In the meantime, we subjoin the principal prizes which will be open to competitors from this country.

Besides the money premiums and medals which will be awarded for fat cattle and sheep, there will be also special premiums and medals for fat pigs. It appears there will be no classing into distinct breeds, age being the mode of classing, thus:

FOREIGN BREEDS.

Cattle, aged Three Years.

1st prize..	1,500 francs, equal to..	£62 10s.
2nd do. ..	1,200 „ „ ..	£50 0s.
3rd do. ..	1,000 „ „ ..	£41 10s.

Aged Four Years.

1st prize..	1,200 francs, equal to..	£50 0s.
2nd do. ..	1,000 „ „ ..	£41 10s.
3rd do. ..	900 „ „ ..	£37 10s.

Sheep.

1st prize..	600 francs, equal to..	£25 0s.
2nd do. ..	500 „ „ ..	£21 0s.
3rd do. ..	400 „ „ ..	£16 0s.
4th do. ..	300 „ „ ..	£12 0s.

In addition, the sum of 2,500 francs (equal to £100), in the form of a cup, is to be awarded to the best fat animal in the showyard.

The same liberal arrangement, as regards the transit and feeding of the stock upon their arrival in France, will be carried out as during the recent Exhibition in Paris. These, our readers are aware, were of a very satisfactory character. From the experience of last Exhibition, these may even be farther improved upon, and exhibitors from this country better prepared to carry out the instructions issued by the French Government.

We need not, perhaps, assure intending exhibitors that they will meet with a ready market for their fat stock; beef, mutton, and pork being as high in Paris as in London: this we have frequently alluded to. Besides, Parisian fleshers will be keen competitors for the premium animals; and even London competition may secure some of these animals for England.

The fat show at Poissy takes place annually, in March or April. Poissy is situated to the north of Paris, on the Dieppe and Havre railway, and is distant from Paris about 16 miles. There is every facility, therefore, for the conveyance of stock; and the accommodation at Poissy—covered housing—is ample, a large market being held there weekly, for the sale of stock for supplying Paris and the surrounding district.

As this additional homage to British agriculture has been granted mainly at the request of Scottish breeders and feeders of stock, made through the French Commissioner, it is to be hoped that a spirited rivalry among feeders will be evinced, to produce animals worthy of competing for such large money-prizes as indicated above.—*North British Agriculturist.*

MORTALITY AMONG CATTLE AT THE CAPE.

What between the raids of the native tribes, who make terrible onslaught upon the sheep and cattle of the border farmers in the Cape colony, and upon those of the Dutch emigrant boers settled in the free states farther north, and the fearful horse sickness and "lung-disease" (as it is locally termed) prevailing, the colonists of Southern Africa are suffering just now dreadfully in the losses of their stock.

Although new and unknown until within a few years in the Cape colony, pleuro-pneumonia has been a fearful scourge in other parts of the globe for some time past. The history of an epidemic among cattle which raged in Sicily 212 years before the Christian era, described by the poet Scilius Italicus, paints the disease of modern times with almost perfect accuracy. In 1693 the principality of Hesse lost the greater part of its cattle by malignant inflammation of the lungs. The symptoms of the disease clearly show that it commences in the respiratory system, and that the danger consists in the intensity of the inflammatory action in the early stage, and the degree in which the vital power is exhausted; for disease of a malignant and typhoid character usually succeeds.

The history, nature, pathology, and treatment of the epidemic were well detailed in a paper by Dr. James Mercer, of Edinburgh, which will be found in the *Farmer's Magazine* (vol. xviii., p. 35) for July, 1848. The opinion of some that the disease is contagious is contradicted by the experience and observations of others. It is, however, strongly insisted on by leading medical men and cattle breeders in the Cape colony. Inoculation appears to be held by many as a perfect antidote; but the best that can be said of it is, that it acts as a divertant to the disease while existing in the cattle, in the same manner as a blister acts as a counter-irritant in inflammatory attacks of the human frame. Where, however, little attention can be given to cattle, owing to the paucity of servants, bleeding, purging, and separation of the diseased flock, seem to be the steps adopted by those most wise in the Cape colony.

The demand for merchandize in the agricultural districts of the Cape colony and the border states has been considerably checked by the sickness which has so long and so extensively prevailed among the horses and cattle of the farmers. At the opening of the present session of the Cape Parliament, the Governor computed the number of deaths of live stock from this cause at 60,000 horses and 100,000 head of cattle, the value of which, at a moderate computation, cannot be less than between £400,000 and £500,000. A statistical return, published in the frontier papers, gives the following enumeration of the casualties by disease; and this return was not quite complete for the whole of the past year, while, since that period, the additional losses sustained have greatly aggravated the calamity:—

HORSE SICKNESS CASUALTIES IN 1855.

Western division	41,853
Eastern division	22,997
	64,850

Of these there were 23,067 horses, 32,323 mares, and 9,460 foals.

LUNG SICKNESS CASUALTIES.

Western district	21,720
Eastern district..............	71,073
	92,793

Of these 33,077 were working oxen, 46,122 breeding cattle, &c., and 13,594 calves.

We have not before us the present statistics of the live stock in this colonial province of the Empire, but the loss must bear a very large centesimal proportion to the whole number in the colony. This loss has necessarily diminished the resources which are usually available to the agriculturists for the purposes of trade; and in a colony where cattle and horses are so much in demand, not only for the means of transport, but for all the agricultural operations which in this country and in America are so largely performed by machinery the loss is the more severely felt.

The Dutch farmers, whose cattle have been stolen continually by the Kaffirs, have recently retaliated upon these marauders, and made an incursion some 500 strong into the districts of the thieving tribes, and returned with a booty of several thousand head of cattle recovered.

The horse disease is very prevalent through most of the districts of the Cape colony. In its development, progress, and successive symptoms, it corresponds generally with the epidemic of last year. It is curiously enough commonly attributed by the Cape farmers to a peculiar miasma in the atmosphere, which, being inhaled, occasions no injury, and possesses no poisonous or deleterious property; but being imbibed in the morning or evening by grass, young leaves, or so-called dog's grass, especially along the banks of the rivers and in swampy parts, becomes the cause of a peculiar product, in consequence of which only a few mouthfuls, taken up by the horse as food, have the same effect as the most rank vegetable poisons, and for which hitherto no active antidote has been discovered. The stabling of horses, and preventing them on being watered from taking the least vegetable food, appears thus far to have been the only preventive.

It is much to be regretted that the Cape farmers, or at least the local journalists, do not make themselves more conversant with the particulars of the diseases as prevalent in Europe among cattle and horses, and the means resorted to, to lessen the mortality. Much benefit would be gained by a more extensive diffusion of the veterinary, chemical, and agricultural knowledge which has been acquired in Britain and Europe in all our colonies.

Our columns have from year to year been filled with numerous valuable papers and details respecting pleuro-pneumonia, and the republication of some of these in the colonial journals might afford much valuable information as to the premonitory symptoms, and the general practice in Europe, when the disease prevails.

THE TOWNELEY HERD.

The summer meetings now drawing to a close have been particularly interesting to the agriculturist. The numerous exhibitions of cattle, of implements, and of agricultural produce, which have taken place in Paris, Chelmsford, Inverness, Rotherham, Athlone, and elsewhere—some general, some local, some even *universal*, but all highly important and useful within their respective spheres of influence and action—are amongst the best means of proving not only the amount of progress that has been achieved in agriculture generally, but also eminently useful in testing the legitimacy of the success and fame which breeders and inventors have gained. That is to say, in demonstrating by the result of a fresh contest whether the honour bestowed upon a competitor is merely the result of accidentally felicitous circumstances, or really the well-deserved reward of genuine excellence and merit.

For several years, Mr. Towneley has taken a position as an exhibiting breeder, such as was scarcely ever attained in this country. Both in England and Ireland there are no ordinary or extraordinary prizes, no challenge cup, no golden medal he has not gained, in all classes, and on all occasions when he has entered the field of competition. To him, indeed, might be applied the famous dicta of Cæsar, *Veni, vidi vici.* In Paris he gained the first prize in every class in which he exhibited; and, to crown all his triumphs, his far-renowned "Master Butterfly," of imperishable memory, realized the highest sum ever paid for any animal of any breed of cattle. In fact his herd is invariably resorted to by spirited breeders of all nations, whenever a show animal is wanted; and it may be said that Mr. Towneley is equally famous for the number of good high-priced animals he sells, as well as for the prizes he never fails to gain in all the exhibitions in which he competes.

No doubt there are other breeders of much longer standing, whose time-hallowed reputation is by no means beclouded or dimmed by Mr. Towneley's unprecedented success; indeed, to come second to such animals as "Master Butterfly," "Roan Duchess," "Blanche 6th," "Vestris," "Beauty," "Butterfly," and "Alice," is still a high position, worthy the ambition of the most celebrated breeders in this country. But, notwithstanding the acknowledged excellence of other herds, we would submit that it is not enough to boast of superior animals;—the mere possession of such is by no means a legitimate cause of pride and greatness. The first object of a breeder is production. Not, indeed, production in the general and broad sense of the word, but production uniting a high standard of perfection to the prolific character of the produce. This alone can enable the breeder to carry on his enterprize with profit and honour to himself and usefulness to the community.

We apprehend that premiums are not offered to agriculturists merely for the personal advantages they have gained, or the private and selfish gratification they may experience at the possession of a valuable animal, but rather for the benefits and advantages which the existence of that animal is likely to bestow upon the community at large, and the impulse it is likely to give to the onward movement of progress. Therefore when we hear of breeders who are said to possess wonderful herds of cattle refusing to part with any of their stock, we scarcely come to the conclusion that their herds can be remarkable for their prolific qualities, whatever their excellence in other respects.

These considerations naturally lead us to another point, so fraught with difficulties, that it is not without reluctance we venture to re-introduce it: we mean that vexed question of over-fattening in breeding stock. All we would wish here to do is to give the results of a personal inspection of the Towneley herd, very recently made, leaving the reader to deduce whatever conclusions he may think proper from the facts to which we will presently refer, and to the accuracy of which we most unhesitatingly pledge ourselves.

In the report of the Chelmsford Show, a Northern paper, speaking of Mr. Towneley's stock generally, says, that "they were in a state of obesity, endangering their procreative power." This remark leads us at once to the consideration whether or not "that procreative power" has been endangered in Mr. Towneley's stock. To this point we paid particular attention during our inspection; and we think it a duty to state fairly and truthfully what we have seen.

In the first place, we observed that those very animals so encased in a layer of fat, and which had excited the apprehensions of the critic, not only were in calf, but have regularly bred from an early age calves worthy of themselves in every respect, and which bid fair to further extend the high character of the Towneley herd. Let us take, for instance, Roan Duchess: she is now about 3 years and a-half old, has had a beautiful calf, and is now within a few months of calving. Then there is Blanche the Sixth, another Chelmsford prize cow: she is about 4 years old, has bred a calf, and is to calve again in a month. Then we come to the beautiful heifer Victoria, another first prize taker at Chelmsford: this is little more than 2 years old, and yet she is within three weeks of calving. There is Vestris, 4 years old, had two calves, and is safe in calf again. Rosa, 8 years old, has now with her sporting in the same field three heifers, the oldest of which is under 2 years old, and has since taken the bull again. That remarkable cow, from which most of the best young stock of the Towneley herd have sprung, has already produced four heifers and two bulls, all of which are living. There is also the famous Butterfly, the dam of Master Butterfly, which has always been very remarkable for her high condition; being now scarcely 7 years old, she has produced four most extraordinary animals, and appears to be in-calf again, although she may be said to have travelled more than any other animal in England, having five times crossed to Ireland and back again, and, moreover, having won every prize she could compete for, in all the principal English exhibitions.

Then we come to Beauty, 8 years old, has bred six calves, and is in-calf again to Master Butterfly. "Vestris 2nd," 3 years old, has had two calves, and is in-calf again. Ringlet, sold to Mr. Douglas, is not 3 years old yet and, has bred two heifer calves. And so we might go through the whole herd; but we have selected only some of those animals which have been winners in scores of exhibitions, and been always kept in a high condition for that purpose. In fact, there is not a single barren cow at Towneley Park, and all are, on the contrary, most remarkable for their prolific qualities.

We, thus, speak at some length of this celebrated herd, because we look upon its existence as one of the boasts of English breeders, at a time when the shorthorn is in great demand among foreign and colonial agriculturists, and when the number of great and spirited breeders are comparatively small. Bates, Lord Spencer, Lord Ducie, alas! are no more; Mr. Tanqueray and Sir Charles Knightley have sold out from a field in which they showed themselves so spirited and so successful; and Mr. Richard Booth does not often part with his stock. But whilst we ungrudingly bestow upon Mr. Towneley every credit for his spirited and successful breeding, it would be unjust on our part were we to pass in silence over the names of his two able coadjutors, Messrs. R. Eastwood and Joseph Culshaw. Those names are sufficiently familiar, it is true, to all who take an interest in shorthorns, and are likely to derive little additional fame from this passing mention, but humble as the present testimony may be, we think it a duty to give it, at the same tlme congratulating Mr. Towneley on his having been so fortunate as to secure the valuable services of two such men.

After mentioning Mr. Towneley, we must not forget the auspicious advent, as a breeder, of a young and brave Crimean officer, Captain Gunter, who, after having done his duty to his country as a soldier, intends now to serve it in a more peaceful but no less efficient way, by devoting his large means and his unwearied energies to the pursuits of agriculture. We understand he has just purchased an extensive estate in Yorkshire, where he intends breeding shorthorns on a proportionate scale. When we bear in mind that he possesses already the greatest number of Duchesses and Oxfords now remaining in England, we can entertain no misgivings as to his ultimate success. With such elements, and being so ably seconded by his agent, Mr. James Knowles, there is no doubt but he will succeed in forming a herd second to none either in the past or present history of the Durham breed. Every one who has at heart the interests of agricultural progress in this country must ungrudgingly applaud the efforts of such men; while it is a duty to give publicity to the meritorious character of their enterprise, and to register their success. T.

IMPORTANCE OF AUTUMN CLEANING.

It is not only amusing, but instructive, to trace the objections commonly urged against any innovations on old customs. The efforts which were first made by Parliament, about the year 1710, to legalize the enclosure of waste land, were boldly met by the objection—What will become of the poor man's geese and his donkey? And when, in the days of the Commonwealth, the men of Lincolnshire tumultuously broke the banks and destroyed other drainage works of those who were striving to rid that great agricultural county of its swamps and extensive fens, how did those mobs excuse themselves but by explaining, (and it was actually a *sufficient* explanation, it seems, for the Commonwealth Parliament) that if the fens were destroyed all the wild ducks would depart, and there would be no places left for the growth of the rushes which they found so useful for thatching. When, again, the late Phillip Pusey, only some ten years since, was urging upon the cultivators of our light lands the importance of the autumn cleansing of wheat stubbles, he was opposed by both the landlords and tenants. "If you cleanse these stubbles in September," urged the landowner, "we shall lose the cover for our partridges." "And then only think of the loss of feed for our sheep, if we kill the couch-grass!" chimed in the landholder of the passing generation. But Pusey was not the man to be answered in this way; he showed that such feed was purchased dearly by the farmer—that the Suffolk farmers were used to systematically cleanse in autumn their stubbles—that rye and tares were a far more profitable crop for sheep-feeding than the couch-grass of foul stubbles—and, moreover, that the true way to make the most of our land is to take an early green and a late root crop, and, as far as practicable, never to see it naked. It was towards the close of 1847 that Pusey was thus employed in one of many of those public labours in which he so much delighted. He felt the importance of the subject to the stock farmer, and he did not lose sight of the object he had advocated, for in 1854 he induced the council of the Royal Agricultural Society to offer a premium for the best account of the autumn cleaning of stubbles; and that account, by Mr. E. Agate, will be found in the sixteenth volume of the Society's *Journal.* If any attempts are to be made in this way by our readers, we can hardly refer to the subject at a more opportune time, although we are aware of the difficulties which are thrown in the way by a late harvest.

It is evident that the handfork is much relied upon in those districts where autumn cleanings are general—they begin with the portion of the land where a winter green crop is to be taken, which should be the cleanest stubble on the farm. "No light-land farmer," says Mr. Agate, "should be satisfied with the condition of his farm till, after being looked-over with forks or spuds after harvest, it is left clean enough for the plough." We should, however, fall very short of a correct view of the importance of an autumn cleaning, if we confined our attention to the land intended for a winter green crop; since, if we merely restrict our consideration to the turnip fallows, the advantage of cleaning even these in autumn is very considerable; for let us not forget, that if we have not a winter green crop on the ground, or a clean fallow, the weeds will grow, and the soil be thus robbed of matters which would otherwise nourish our cultivated crops. And then, too, it is of great importance on dry turnip soils to avoid spring ploughings as much as possible, since the more the land is ploughed the more moisture it loses; and of the importance of even a small portion of that moisture to the young turnip plant, most farmers who have seen the good effect of adding a few tons of water per acre to the soil by the water drill, will readily bear testimony.

FARM BOOK-KEEPING.

The first test of a good trader is his account-book. Our fortunes and misfortunes are alike tried by it. Beyond our own individual interest, the common good requires that we should always be prepared to show how we are going on. This is a much greater virtue than people who are doing pretty well may perhaps be inclined to consider. When, however, the evil day does come, it falls all the easier on him who has even sunk with some method and exactness. Mr. Reckless throws himself on the mercy of "his honour;" able to pay fifteen shillings in the pound, but totally unable to say how he has got rid of his receipts. He owes so much, and he has so much; beyond this there is no correct account. A reprimand, may-be a remand, and a third-class certificate is his reward. Whereas, on the other hand, his neighbour, who has carefully registered the expenditure of every sixpence down to turn-pikes and postage-stamps, declares a dividend of four-pence and a half-penny, and leaves the Court with a compliment from the Commissioner. His accounts have saved him. They have been "very admirably kept," and prove him, despite his want of success, to be "a thorough man of business."

And this is what we want to make the farmer. In doing so we have no desire to prove him in any so unhealthy an atmosphere. Indeed, if we are to credit popular opinion, he is just now realizing money rather than losing it. Still there is quite as great a necessity for his systematically recording, if it be only for his own private perusal, all he pays and all he receives. Many a man has been ruined ere this by looking at his condition in too favourable a light; and the learned commissioner, after all, may not be far wrong when he distinguishes the preciseness of four-pence-half-penny against the "non mi recordo" of a nearly solvent man. The Northumberland Judges, as we showed in our last, made "good accounts" one of their leading points in their estimate of a good farmer. In fact, did we not know so much to the contrary, it would be difficult to imagine a good farmer without them. By this time, however, we are getting beyond an age when the sample-bag purse, the missis's strong box, or even the banker's book, knew far better how a man stood with the world than he did himself. The aim now is to have the agriculturist well grounded in all the leading principles of commerce, and so able to recommend himself, as did the country auctioneer, "as very much of a gentleman and quite a man of business."

The mistake hitherto has been that we have asked too much. As with some of the legion of plans for the collection of statistics, we would have not only the facts the farmer does know, but a great deal more that he does not. We should so lose our friend in a labyrinth of estimates and complicated calculations—more prone than ever, from his little experience, to trust to "the stocking"—and take out what he did want, and put in what he did not. It is but one of those nice cases where the patient must be gradually encouraged into getting better. Violent measures will never do, and simplicity of treatment, after all, is what we have chiefly to rely on.

Still there is no denying that the world will have the farmer to be more of a man of business. His trade is to be no longer the exception, but provided like every other pursuit with a profit-and-loss account of it. We have it by this prominently registered in the list of his qualifications. To whom, then, in such a strait, shall we look for guidance? A very multitude of counsellors are ready to aid him. How some of these have attempted to do so, it has been our province long since to record. Sufficient be it to say here that nearly all had the same failing. They asked too much, and assumed every tenant to have the same taste and talent for figures they themselves possessed. Hence, so far, we have had no strong authority on the keeping of farm accounts. Mr. Stephens, of "The Book of the

Farm," comes opportunely to the rescue. His plan, entitled "A Practical System of Farm Book-keeping," is thus explained:—"The common-sense view of this system of farm book-keeping is this: Let the farmer keep only such books as he really requires to acquaint him with the state of his affairs. If he will attend to me for a short time, I will here show him a set of books filled up with the real transactions which took place upon a farm in 1849-50. He may safely adopt them as a pattern, which will not entail upon him much labour throughout the year. The theory of the system is simply this: Let the farmer take an inventory and valuation of his live stock, implements, crops, cost of labour, and debts due to and by him, at the beginning of every agricultural year, and he will see whether his capital has increased or diminished in the course of the year—it will increase by a larger produce and by a higher price, and diminish by a scantier produce and by a lower price. Let him keep a cash-book, which will inform him whether he has received or paid away most cash in the course of the year. Let him have an account with the farm, by which he will learn whether the value of the produce he has been able to dispose of is greater or less than the cost of conducting the farm. It is clear that a knowledge of these particulars must acquaint the farmer with the real state of his affairs at the beginning of every agricultural year."

Of course, all this is exemplified in detail by pages from the inventory and valuation book, cash book, farm account book, and ledger. The only objection, perhaps, is there being too many books, the great aim hitherto having been to bring all these into one. So much, however, could only be accomplished at some sacrifice of the simple and very easy mode of entry and reference Mr. Stephens recommends. The example pages speak far more clearly to what this really is than any remarks which either the author or ourselves could offer upon them. From some study of the arrangement advocated, we are inclined to look at it as very much what it professes to be, "a practical system"—the highest compliment we could pay, and one that will have due weight with our readers. If Mr. Stephens even still asks a little too much, a perusal of his essay will suggest much, and tend more than anything we have yet seen towards farmers putting their houses in order.

It may be not out of place here to mention that we have also a copy of the paper on Farm Accounts, read by Mr. Walker, of Belfast, before the members of the Chemico-Agricultural Society. This, too, is accompanied by some example sheets, which best interpret themselves, and form unquestionably the most valuable part of the treatise.

A SKETCH OF BARNET FAIR.—(From a Correspondent.)—Suppose yourself entering the town of Barnet, in the midst of a chaotic labyrinth of all characters and descriptions of men and beasts, being unable to extricate yourself *ad libitum* from your embarrassed and precarious "fix." Imagine twenty or more ruthless brutes of fellows simultaneously galloping at full speed down the hill where you are standing, cracking their whips at every step their horses take, at the expense of your eye-sight by means of the one, and your very life by the lawless Mazeppa-forced velocity of the other, your whole person being enveloped in darkening clouds of dust, threatening you with instantaneous suffocation! Add to your afore-named dilemma (for when you are in it you cannot get out of it) some hundreds of goaded bullocks, like an immense forest of horns, propelled hurriedly towards you, amid the most hideous and uproarious shouting of a set of semi-barbarous drovers, who value (if they set any value but upon themselves) a restive bullock far beyond the life of a human being, driving their mad and noisy herds over every person they meet, if they are not fortunate enough to get out of their way; closely followed by a large drove of unbroken-in wild Welsh ponies, fresh from their native hills, all of them loose and unrestrained as the oxen that preceded them, kicking, rearing, and biting each other, and flying out of the order of their group in every direction, amid the unintelligible anathemas of their inhuman attendants! Fancy, when you hear the more merciful warning "Out of the way!" a dozen costermongers' drags filled to the last inch of their accommodation with the outpoured, intoxicated dregs of the very lowest neighbourhoods of London, desecration accompanying almost every word they utter, just about to run over you, by way of a "fair" lark, if the timely warning had not startled you to a notion of self-preservation. There is no room here for thinking how to act; you must do as the moment directs you, and you must make the best use of your eyes and ears to keep you out of your position. More by hit than by wit, you succeed in entering the town of Barnet, where your "ought to be thankful" personage might fancy itself safe. No such thing. There is no footway for you on either side of the road: these are occupied by masses of ferocious bulls, which can be restrained from committing serious mischief only by means of a band of fellows schooled in every class of cruelty, who are incessantly engaged in battering the animals about the eyes and nose with thick sticks, which is enough to stun them at every blow. In the roadway are cows with their calves: the former, jealous for the safety of their little charges, are charging indiscriminately in all directions, amid the inharmonious din of numerous dogs, and the noisy "hurrahs" of lots of "un-English speaking" Welshmen, who may have just sold some of their bovine stock, whilst they are to be seen throwing up their long-worn, shapeless hats high in the air, as a type of Taffy's delight, uttering at the same time a tirade of gibberish which no one can understand but themselves. Go further into the town, and you behold every inn and public-house thronged like a popular theatre on a benefit night. It is here business is fully transacted; it is here that some scores of thousands of pounds change hands in the course of a few hours; it is here that once a year the graziers, farmers, and horse-dealers meet upon terms of equality; and Barnet at this period becomes one of, if not the, greatest agricultural exchange marts of the United Kingdom. Eating, drinking, carousing, and every feature of extravagant and irrational depravity, are signally developed here. The streets are lined with men and cattle, promiscuously crowded together, forming one dense mass of moving matter. Go into the beer-shops: here you will detect the *Sibylline* sisterhood predicting, for the offering of a few pence, the future destinies of their too-credulous victims; while the brain-racking fiddle is keeping time to the orders and calls for the fulfilment of pints and quarts of the intoxicating beverage, which adds in its ultimate effects confusion to the scene. Here you will observe ventriloquists practising their vocal arts to the confounding astonishment of the wide-opened eyes of the country drovers, who never could possibly have believed that a public-house cat could speak like a child, or that a sucking-pig could whistle "Annie Laurie." Here you may notice dancing-booths, eating and drinking booths, gambling-booths, and booths for more general accommodation, distributed over the meadows propinquent to Barnet town; whilst stick and umbrella merchants, oyster-merchants, ginger-beer merchants, and "all-heal" merchants, with other innumerable classes of contingent, ephemeral, and speculative adventurers upon this venturesome occasion, are to be witnessed, scattered everywhere over the face of this busy arena of agricultural imperialism. Such is a brief sketch of the picturesque features of Barnet Fair.

SALE OF MR. LUGAR'S FLOCK OF SOUTHDOWNS

AT HENGRAVE, NEAR BURY ST. EDMUND'S.

By Mr. Strafford.

The Southdown amongst sheep is just now what the Shorthorn is in cattle, and the thorough-bred with horses—the especial favourite of all his kind. If any proof of this were needed, it might be supplied in a variety of ways: the high prices the breed command, the avidity with which they are sought after, their comely look to the eye, and their excellence on the table. No wonder, then, that in these days of enterprise and advancement we find "famous" flocks gradually increasing upon us. It is no longer Ellman or Webb first, and the rest nowhere. On the contrary, there is many a breeder well worthy to enter against them. Good judgment, liberal outlay, and constant care are rarely without their reward; and by the aid of such allies many a flockmaster has honestly worked his way to position and distinction.

Prominently amongst these stands Mr. Henry Lugar. Since the time when he first figured as an exhibitor no man has continued to show more favourably. He has always had something worth looking at, and the experience of our national and local meetings would give him a very high average. Some of the Hengrave prize ewes will never be forgotten; while such of his contemporaries, from whom Mr. Lugar has borrowed a strain, may always instance with effect to the value of the cross. Next to a good let or sale itself, there is nothing more satisfactory than to know your animals will be done justice to.

Ample expression of this was to be found at the sale on Friday, Sept. 5. The established character of the Hengrave flock could be best estimated in the attendance on its dispersion. There was hardly a known breeder or later fancier of Southdowns but was either himself present, or but that was well represented. Jonas Webb, though suffering from indisposition, had his carriage drawn up to the side of the ring. Henry Overman, with his recent honours thick upon him, presided at the lunch which preceded the more important business of the occasion. Mr. Rigden came himself from Sussex; and the Duke of Richmond's shepherd was a ready bidder. The steward of Lord Walsingham was busy on the same errand; while the Messrs. Sexton, Crisp, Hawkins, Aylmer, and others from the more immediate neighbourhood, all came fully prepared for the opportunity afforded them. With these were some more celebrated, perhaps, in other branches of the same pursuit, but all more or less identified with the development of British agriculture—Fisher Hobbs, for his pigs and his Herefords; Barthropp, renowned for his horses and shorthorns; Badham, in another way, for the native breeds of Suffolk; Jonas, of Ickleton; Clayden, of Whittlebury; Captain Barlow especially zealous for clever hunters and good blood—There was not a judge of a well-bred animal of any kind but might have been selected in a moment from the Hengrave company. Mr. Strafford must have been proud of his audience—a feeling Mr. Lugar might becomingly share with him.

There was more than one inducement to warrant this. Beyond the quality of the flock it was well known the sale was a bonâ fide one; that every sheep on the farm would be put up, and every lot sold for what it would fetch. Circumstances not altogether within his own control have induced Mr. Lugar to abandon a pursuit in which he has already achieved so much well-merited success. There was consequently none of that picking and choosing which too often characterize the retirement of a gentleman, who is in reality only weeding out, and whose subsequent re-appearance is seldom a surprise. There was no effort even to make the average a high one by keeping back any inferior animals; and altogether we are willing to record the sale as amongst the most legitimate of such occasions.

Those who did attend could have been in no way disappointed. The flock generally—rams, ewes, and lambs—was pronounced to be in capital condition. The sheep had, too, that uniform look and character so evident of the care with which they had been cultivated. Like Jonas Webb's, from whom they are in a great measure bred, it was the Down sheep reared away from the Down country—breadth and size associated with quality—that would appear to have been now pushed to the highest desirable attainment of any such a union.

The visitors were very early on the ground. What they thought of what they saw will be best gathered from the list of prizes subjoined. It must be remembered that this includes "all sorts;" while scarcely there was an American, a Colonist, or Foreigner to give that zest they so often do to Mr. Strafford's orations. The sale, indeed, is altogether a landmark of what we can afford to do for ourselves. It was conducted, moreover, without any bolstering or hanging fire. We must do the auctioneer the justice to say that we never saw any one act with more promptitude or business-like despatch. If a man really meant anything, he had to open his heart and mouth at once.

As we have already intimated, the prologue of the occasion was a very bountiful luncheon, signalized by a manly little speech from Mr. Lugar, the history of whose flock may be best gathered from the opening page of the catalogue :—"This flock has been bred with great care and attention for upwards of fifty years by Mr. Lugar and his father, from ewes originally purchased in the county of Sussex—since crossed by rams from the celebrated Glynde flock, followed by others from those of Mr. Grantham, the Duke of Richmond, and latterly by some of the very best rams hired of Mr. Jonas Webb.....The sheep will be found on inspection to fully sustain the high character attained for the flock at the meetings of the Royal Agricultural Society at Gloucester, Lincoln, and Carlisle, as well as at numerous other shows in the counties of Norfolk and Suffolk."

The remarks of a correspondent, which we subjoin, will afford some further information on this point.

[FROM A CORRESPONDENT.]

On Friday the sale of this far-famed flock of pure-bred Southdown sheep came off at Hengrave, near Bury St. Edmunds, in the county of Suffolk, and attracted, as might be expected, a very numerous company of distinguished breeders and flockmasters from various parts of the kingdom, as well as purchasers from distant lands. The result of the sale was, we believe, in its general features of average, one of the highest on record since the days of Ellman, the founder of the breed. Such a result must have been highly gratifying, not only to the proprietor, but to the most ardent admirer of the sort, and one, indeed, that would be a credit to any flock, even in the most favoured districts. We can well imagine that such breeders as Messrs. Webb, Ellman, Rigden, Overman, Sexton, and others of the same order, who attended the sale, must have felt satisfied with the pursuit in which they are engaged, and that the progress of this favourite breed of sheep has not suffered at the hands of the owner of the Hengrave Flock, who has trodden in the footsteps of his late respected father, the founder of the flock, who about fifty years ago commenced it with some ewes obtained from the county of Sussex, and which have since been crossed with rams from the Glynde flock, followed by others from those of Mr. Grantham's, the Duke of Richmond's, and latterly by Mr. Webb's best rams, showing not only great judgment and care in the breeding, but the condition and character of the flock were such as to reflect the highest credit on the attention that had been bestowed upon it.

The sale was conducted by Mr. Strafford, of Euston-square, with that ability which has earned for him a reputation of the highest character. The *prestige* which has long attached to his name in connection with the sale of Shorthorns appears destined to follow him in the no less important department of Southdowns. We can remember his *debut* as an auctioneer, not ten years ago, in this self-same county (Suffolk); and although the present is not his first sale of the kind, its character, and the success which attended it, were such as to justify us in placing it along with the Tortworth, Fawsley, Hendon, Kirklcavington, and other famed sales of different periods that will long be remembered in the history of British agriculture. Great Britain may well be proud of her yeomen and tenant farmers, when one of that class can realize, for a flock consisting of 622 shearling and older ewes, 279 lambs, and 52 rams, considerably more than £5,000, as was the case in the present instance. The entire flock was sold without the slightest reserve. We subjoin a few of the highest-priced lots of each class, and the order in which they were sold.

SHEARLING EWES.—Mr. R. A. Alexander, of Kentucky, bought the highest pen at 12 gs. per head; he also bought another lot at 10 guineas. Mr. Thorne, of New York, bought the next lot at 11 gs., and another lot at 10 gs. per head; others were sold at 7 gs. and 6 gs.: the 21 lots, or 172 head of sheep, realized £935 8s. 6d., averaging about 109s. per head. Two pens were also bought for Mr. Jonas Webb.

TWO-SHEAR EWES.—Mr. Crisp, of Chillesford Lodge, was the buyer of the three highest priced lots, at 160s., 140s., and 135s. per head. This class consisted of 13 lots, or 111 sheep, realizing £545 5s., averaging 98s. per head.

SIX-TOOTHED AND OLDER EWES.—Mr. Rigden, of the Hove, was the purchaser of the highest priced pen at 168s. per head; two other pens were sold to the Duke of Richmond, at 145s. and 120s. Lord Walsingham also bought a lot at 125s.; three pens were also bought for Mr. Jonas Webb. This class consisted of 36 lots, or 339 sheep, which sold for £1,216 12s. 6d., average 72s. per head.

EWE LAMBS.—Mr. G. Sexton bought the highest-priced pen at 135s. per head. Mr. Overman bought three lots at 110., 110s., and 100s. per head. This class comprised 26 lots, or 234 ewe lambs, which sold at £713 10s. Average, 68s. per head.

SHEARLING RAMS.—Mr. R. A. Alexander, Kentucky, was the purchaser of Lot 1, at 80 gs. Sir E. Poore bought Lot 5 at 65 gs. Mr. Hawkins bought Lot 2 at 54 gs., and Lot 8 at 45 guineas. Sir R. Throckmorton got Lot 4 at 41 gs. Lot 20 was bought for the Earl of Jersey at 41 gs. Several others realized good prices. This class consisted of 29 sheep, which sold for £702 19s. 6d. Average, £24 5s. each.

TWO-SHEAR AND OLDER RAMS.—Mr. Hawkins, Smallbridge, bought Lot 1, a three-shear ram, at 41 guineas. Mr. Aylmer, a two-shear at 37 gs. Mr. Mosely, a two-shear at 30 gs. This class consisted of 23 sheep, which sold for £461 9s. 6d. Average, upwards of £20 each.

RAM LAMBS.—Mr. Overman, of Weasenham, was the purchaser of the highest priced ram lamb at 45 gs.; he also bought another at 25 gs.; Mr. Hawkins, one at 27 gs.; Mr. Clayden bought a late lamb at 25 gs.; several others selling in pairs at 35 gs., 31 gs., 30 gs., 28 gs., 24 gs. This class consisted of 45 ram lambs, which sold for £651, averaging £14 10s. each.

The following are the principal purchasers and parties attending the sale :—Duke of Grafton, Duke of Richmond, Earl Dacre, Earl of Jersey, Lord Sondes, and Lord Walsingham. We also noticed the agents of the Earl of Leicester, and other noblemen, as well of those of Sir R. G. Throckmorton, Sir E. S. Gooch, M.P., Sir J. W. Lubbock, Sir E. Poore, Sir H. Muggeridge, Messrs. Ellman, J. Webb, H. Webb, S. Jonas, J. Clayden, H. Thurnall, W. Rigden, H. Overman, sen., H. Overman, jun., R. Overman, G. Sexton, M. Sexton, N. G. Barthropp, T. Crisp, J. Cobbold, Oxley Parker, W. F. Hobbs, G. Badham, C. Boby, Barlow, Hawkins, G. Williams, Cottingham, Biddle, Muskett, T. F. Weiss, Gayord, Oslar, Tattersall, Cooke, England, Hempson, Davis, Bryant, Gifford, Fyson, Bailey, Lee, Phillips, Everard, Fulcher, Coleman, Nun, Walton, Whittle, Ward, Newall, Pettit, Frost, Samson, Christmas, Harrold, Aylmer, Moseley, Ford, Clover, Fossey, Johnson, Smith, Wigson, &c., &c.

The company were entertained with a sumptuous luncheon, served in a tent, near the sale, over which Mr. Overman presided. The general arrangements of the sale were excellent, and the day proving fine added to the enjoyment of the same. In the evening, Mr. Lugar again entertained a party of his friends in his house, where the topics of the day were duly discussed, and various points connected with agriculture canvassed. The party did not separate until a late hour, greatly pleased with the day's proceedings.

PARING AND BURNING.

Sir,—Now is the time to watch all intervals of dry weather, and to set about the paring and burning of stubbles, ere it is too late in the season to effect the good it is intended to convey. No employment of horses and men does more good at this time, and pays better, than this; but the destruction of weeds at this season of the year has hitherto been unavoidably postponed till it was too late, manual labour being too ineffectual and inapt to perform it, even when labourers had not been inert, and farmers had been willing to pay them well for it. As soon as the corn is cleared off the fields, and once provided with our neighbour Bentall's "broad-share," no other implements than a large rake, fork, and shovel, for each man to be employed, are required to effect the purpose. The land is thus left in so fine a tilth as to admit myriads of seedling weeds to spring up, before it is to be ploughed and sown, such as would not else germinate for years. We would just observe that, whoever is not supplied with this efficient implement ought to be; and our distant correspondents, who have but little knowledge of it, will do well to take our reliance and recommendation of it, as we can faithfully describe its merits in every point as a first-rate article for expeditiously and cheaply clearing the surface of the land.

The process of paring and burning is simple, cheap, and efficacious, and productive of much good, especially on heavy soils, where it does so in a *twofold* sense, namely, *cleaning* and *renovating* the pitchy crust; but on light lands it may do good only in *one* sense, namely, *cleaning* the land of weeds, which indeed, by-the-bye, is of itself no mean consideration.

First, the broad-share, three horses, one man, and a boy, will pare twice over, in a reversed manner, three acres in a day—say at a cost of 5s. per acre. Three clever men to follow, whilst all is dry, with large-sized, strong rakes, raking up, first, all the stubble and weeds in their green state, and before they have shed any seeds, taking five common-sized stetches at a time, forming fires on the middle stetch, at about every two or three rods, by raking the stubble and weeds all around the said five stetches towards the fire *places*. Then, with a four-pronged fork, form and set alight the fires at three places, on opposite sides; and then, when they are about half-burned through, rake all the clots up towards the fire, and bury up; and at night finish by heaping all the loose earth over them, that can be shovelled up around them, a rod wide (or wider, to any extent; for the whole field would burn, if *time* and *expense* were no object). The next morning most of them, and all, if properly managed, will be burnt or scorched through sufficiently to kill all vegetable and animal life they are composed of; for the haunts of the larva of many kinds of destructive insects are concealed in those clods, basking in the sun at this season of the year, whilst its rays are powerful enough to nourish and foster them. After this time they descend, and the only chance then is the frost to destroy them after the land is ploughed. "The rooks, sir," whispers some one (Ah! ah! I forgot the rooks); "you should recollect and consider the rooks, sir." Yes, yes, we do recollect them, to our sorrow; and so much so as to know, too, that in gentlemen's gardens and poor men's allotments, where no rooks are allowed to enter, look into, or even fly over, and in many fenny districts and open countries, where no rooks abound, are produced the very best of crops, both of vegetables and corn too! This is all fudge.

After this, the fires will require only a little trimming and tucking up, and the work is finished and completed with about one load of burnt earth and weeds at each fire, or at about 40 loads on an acre, valued at 2s. per load at least. We say *on*, for it is *already on*; and this makes it so *valuable*, as the *cartage* is spared—a great consideration; and on heavy lands no other manure will be required for corn this year. The whole of the expense may be summed up, per acre:—

	£	s.	d.
Three horses, one man, and one boy, broad-sharing	0	5	0
Three men, two days each, raking and burning, at 2s. 6d. a day each (without beer, as we allow none for ourselves or our men) .	0	15	0
Total expense for an acre . .	1	0	0

Hardy and Son, Seed-growers, &c.

Limbourne Brook, and Knowle's Farm,
Maldon, Essex, Sept. 3.

ON SURFACE-BURNING CLAY SOILS.

Sir,—The system of burning earth at this season has been discussed in the *Gardener's Chronicle and Agricultural Gazette*; and as no time offers to meet those observations, I at once forward you an advertisement, inviting persons to inspect the process in full operation, and to judge for themselves how far the practice (as described by the Messrs. Hardy of Maldon) can be carried on at the small cost they represent.

It is peculiarly a practice appertaining to Essex, and was accurately described in my essay upon the "Farming of Essex," inserted in the Journal of the Royal Agricultural Society. We now use two descriptions of implements for stirring the surface, which is done about 4 inches in depth; this is harrowed and all the loose soil and weeds collected and burned in heaps of 4 square perches each, and produce about 35 to 40 bushels each, and 40 such heaps per acre, which are spread and ploughed in.

As the cost differs so greatly from what is stated by Messrs. Hardy—viz., the broadsharing 5s. per acre, and the burning 10s. or 12s. per acre—I presume they have not practically carried it out themselves, but have received their statement from others. The expense of my operation is as under—

	£	s.	d.
To broadsharing 4 inches deep—four horses at 3s. 6d., and one man, 3½ acres per day, 5s. 6d. per acre, including irons of implement	0	5	6
To ditto crossways, with three horses, at 3s. 6d.	0	3	6
Harrowing	0	0	9
To burning in 4-rod heaps at 8d., 40 heaps to each statute acre..	1	6	8
Spreading, at 1¼d.	0	4	2
Eight trusses of straw, at 6d......................	0	4	0
Wood or bushes	0	4	0
Cost per acre	2	8	7

It will be seen that the foregoing is rather an expensive process; but it must be borne in mind that the land becomes at once cleaned and manured. The latter has been tested, and is found, upon the first crop, equal in effect to one-and-a-half cwt. of guano per acre; the subsequent effects are visible for several years, and the land can be tilled at a considerably less sum, by reason of its working more easily.

In sending you this communication, I beg to state that it is not with any intention of disparaging Messrs. Hardy's statements, but to set the public right; which can be best effected by a personal inspection; and if the fine weather continues until Thursday next, it may upon that day, be seen in operation, or upon any other day more convenient to parties.

I remain, sir, your most obedient servant,

Writtle, Sept. 15. ROBERT BAKER.

REVIEW.

BRICKMAKING. By HUMPHREY CHAMBERLAIN, Draining Engineer, Kempsey, near Worcester. London: W. Trounce, 9, Cursitor-street, Chancery-lane.

This is the substance of two papers read before the Society of Arts on the 4th and 11th of June, 1856, and reprinted from the *Journal* of the Society of Arts, and for which the Society awarded the author its silver medal. It is a pamphlet which ought to be in the hands of all interested in bricks and their manufacture; and therefore we earnestly recommend it to the attention of our readers. The following are extracts:

"The next process is the manufacture of this clay into bricks; and I cannot refrain here from mentioning what an injurious effect the present system of hand-making has on the habits of the men. The brickmakers (that is, the moulders and their attendants), men and lads, are, throughout the kingdom, employed at their trade only during six or seven months in the year, except where bricks are artificially dried, in the neighbourhood of collieries. In the winter season, the bricks would be destroyed by frost; neither could they then be dried. They therefore work early and late; and from their having no winter occupation, and on account of their dirty and laborious work, they have such a price per thousand as to compensate them. The result is generally, among this class of men, that, although they are so well off in the summer time, they spend all they earn, leaving the winter to provide for itself. At that season, when they require most to sustain both themselves and their families, as well as fuel, they have nothing to fall back upon, and in too many instances no employment; for, as they earn so good wages in the summer, they do not willingly come down to the price of ordinary labour. These are the men whom the introduction of machinery will affect."

"I will now more fully describe a principle of burning which I have had in practice for the last six years, and which I can therefore recommend with great confidence. The great object in brick-burning is to attain a sufficient heat to thoroughly burn the ware with as small a consumption of coal as possible, and with nearly an equal distribution of the heat over all parts, so that the whole of the ware, being subjected to the same temperature, may contract equally in bulk, and be of one uniform colour throughout. The advantage is also gained of burning in much less time than in the old kilns, which, on an average, took a week; and the management is so simplified that any man, even though not at all conversant with the manufacture, after he has seen one kiln burnt, will be able to manage; and the last, though not least, advantage is that of delivering up to us the waste heat at the ground level, or under the floor of the kiln, to be used in drying the green ware, or in partially burning the next kiln."

AN ENGLISH LANDLORD AMONG HIS TENANTRY.

At the late meeting of the County of Sussex Show, the Duke of Richmond, who presided, in returning thanks, on his health being drunk, said—"It has been my good fortune for many years to meet the farmers of England in various parts of the country, and I feel that one of the privileges of a landowner is to take every opportunity of meeting the tenantry of the country. I am now too old to expect to have the pleasure long, and I wish to express to the younger men around me that in absenting themselves from meetings of the farmers they deprive themselves of one of the greatest pleasures of life. I believe it will be admitted by all that the interest of the landlord and of the tenant is one and the same. If that be correct, then I ask where is the landlord to be found in a more proper place than surrounded by the tenantry of the country? I believe that the advantage of these meetings, even in an agricultural point of view, is admitted by all; for I would ask you to go into the market towns on a market day, and you will see the stock very much improved as compared with what it used to be, which I attribute in a great measure to the exertions of these societies. Gentlemen, I for one have had the greatest pleasure in coming among you to-day. I feel it to be one of my duties as a landlord to become acquainted with as many farmers and gentlemen of the county as it is in my power to do. I came here this morning by an early train, and by the kindness of Mr. Sanders I had an opportunity of driving around the neighbourhood of this lovely town; and I assure you I go back to-night to the West of Sussex deeply gratified with your locality, proud of the stock you have shown, and grateful to you—the farmers of Sussex—for the kind manner in which you have received me on the present, and on every occasion when it has been my good fortune to come among you. I thank you for the compliment you have paid me. I don't claim any merit of my own; but if ever you find me not pursuing a right and straightforward course, I ask you to withdraw your countenance from me, and, instead of receiving me with cheers, greet me with those hisses which I should well deserve." In proposing the "Unsuccessful candidates," his Grace said—"I well know from experience how difficult it is to induce any gentleman to get up and return thanks for a toast which I am sure all will drink in the favourable manner it so well deserves—the 'Unsuccessful candidates.' We can't always expect to win prizes, and I can speak of that unenviable position practically and personally. But when I can't win a prize I never abuse the judges; I always think that there is something in my animal which ought to be better, and I go home and endeavour to find out what it is, and persevere until I get to be at the top of the tree again." In alluding to the proposition that their meeting next year should be held in West Sussex the Duke said—"I hope Mr. Rigden will not be a steward of the yard, but that he will take the bull by the horns and come and beat me in my own neighbourhood as he has done elsewhere, and may do again; but I can tell him that it won't be an easy matter for him to do so there, as I shall have the advantage of having my sheep within three miles of Chichester, and therefore I shall be able to show them with a better chance of success in that division of the county. I quite agree with him that we did not cut as good a figure at Chelmsford as I could wish; but I think you will agree with me that it would not do for us to bring all the prizes into Sussex; for, if we did, you know the Berkshire and Herefordshire people would not show at all; we must give them a pull sometimes, and although we may admit that we were beaten, we don't admit that we are done yet. I see the next meeting of the Royal Agricultural Society is to be held at Salisbury, and I shall not be ashamed to show my southdowns against the westdowns of Wiltshire and Hampshire." To the sinew and bone of the country, "The agricultural labourers," his Grace paid the following deserved compliment—"I always feel it my duty and pleasure at meetings of the tenant farmers to propose to drink to the 'health and welfare of that valuable body of men, the agricultural labourers.' We are well aware that they are destined by Providence to earn their livelihood by the sweat of their brow, and we know their good qualities. When men are wanted for the army or navy they are obtained from the agricultural districts, and we know how chivalrous, how noble, and how continued are their exertions in their country's cause; but we, the practical farmers, know also that without them we could not till our land. Without having men on whom we could place confidence, we could send no sheep to this show, because they want the good shepherd's care, and we must all be aware of the importance of these men to the country. May they continue to flourish; may they be happy and contented with their lot; and always look to their employers as their best and sincerest friends. I will give you, with three times three, 'Prosperity to the agricultural labourers of the country,' and I am sure in addressing you I need only say that in the county of Sussex at all events the farmers are the best and kindest friends to the labouring classes."

THE EARL OF LONSDALE ON THE IMPROVEMENT IN AGRICULTURE.—At the recent meeting of the West Cumberland Agricultural Society the Earl of Lonsdale said:—"Since he had become connected with this county, agriculture had made important strides. Fifty years ago no one could have contemplated the state of perfection to which it had reached. Progression, he might say very truly, was the order of the day, and agriculture had not lagged in the race. The means and talents of wealthy and clever, enterprising and vigorous men were applied to facilitating the production of stock and crops, and wherever we turned there were signs of improvement in one way or another. He might mention incidentally what he had observed that day, merely as an instance of progress in the details of farming. He had seen some samples of mangold-wurzel, which was a new cultivation in that county, that could not be excelled; and he was confident, from his own experience of the climate of the West of Cumberland, lying low as it did, and in the immediate vicinity of the sea, there could not be a green crop better adapted to cultivation in those parts, or more advantageous to the grower, than mangold-wurzel. They could be kept longer than turnips, and in that county, where the springs were late and the season cold, it was most desirable to feed cattle upon them. Attention had been drawn to the proceedings of a recent agricultural meeting at Preston, where speeches were made, certainly of great talent, especially by Lord Stanley, evincing very just notions and views of the present state of agriculture. In reading over those proceedings he had been most struck with the peculiar force of a remark which fell from Mr. Sergeant Shuttleworth, a man of eminence in the present day, a man of observation and keen penetration, who had travelled much, and whom he (the Noble Earl) had had the good fortune to have as an assistant for a short time at the Privy Council sittings at the Board of Education. He made an observation on that occasion which had struck him with peculiar force, more especially as he (Lord Lonsdale) had proved its truth so far back as ten or twelve years ago; and proud he was that his experience should be endorsed by so high an authority. Sergeant Shuttleworth had said that the first step in the improvement of agriculture was the pipe-tile draining. Now he (Lord Lonsdale) had long pursued that principle; he manufactured the tiling for his own purposes, and he looked upon it as the most suitable thing for the work that human ingenuity could have devised. Nevertheless he was sorry to observe that many agriculturists in that county still pursued the old and inferior system; and what he wished to impress upon the farmers of Cumberland was that they were the only persons who now persisted in that erroneous system; for if they went over the ground he had done in the pursuit of fox-hunting, to which he was partial, and which took him over a great portion of the county, they would find that that system was almost entirely excluded from other counties. Now, he had been a manufacturer of these tile-pipes for his own purposes for a considerable length of time, and the surplus was disposed of to such of his farmers as might wish for them; and he assured them, if others would take up the manufacture, they would find it a profitable business from the preference which would be given to them beyond all others, and at the same time be conferring a signal benefit upon the agriculture of the county. He did not wish to enter into the trade himself, but whoever adopted it would find it both remunerative and useful. He was still further fortified in his good opinion of the system he recommended by the fact, as he had seen in a newspaper paragraph, that the Emperor of the French, a most intelligent and far-seeing man—a man capable of judging not in one thing only, but in all the details of a government—for the encouragement of pipe draining in France, had reduced the duty upon the imported machines (the extreme jealously of the government had once made it a very heavy one) from 65 to 10 francs; in fact to a mere nominal duty, more for the purpose of registering the article on its importation than anything else. He repeated that the Emperor of the French, being a man of sense and intelligence, surrounded by advisers also men of intelligence, considered that the application of this system would be so beneficial to his country, that he had provided for the almost free admission of all machines for the manufacture of tile piping. Gentlemen, continued his lordship, we have the advantage of all the discoveries in chemistry and machinery, and of the unremitting labours of scientific men who are concentrating their energies upon the best and cheapest method of applying mechanical power to the purposes of agriculture. Some great schemes are afloat for overcoming the difficulties which have hitherto beset us. Some are laughed at as impracticable and visionary; but after the marvels we have in our own day witnessed in the phenomena of gas, electric telegraphs, locomotives, and a hundred other things, we need not despair that sooner or later the remedy will be found. Great attention is at this moment being turned to the crushing and pulverisation of earth by steam power. I know eminent men who are confident of the success of their labours; others are applying themselves to reaping machines; and another difficult problem is the proper application of the sewage manure of towns to the purposes of agriculture. In fact, these are the three great problems of the present day, and my most earnest hope is that each and all may be happily solved. I feel confident that if all this talent and capital can be successfully applied to the purposes of agriculture—that if all these things can be obtained, we shall be in no want of supplies from other countries, and that we shall at length be enabled to feed ourselves upon the fruits of our own industry, without assistance from abroad.

AMERICAN SHORT-HORNED CATTLE.

Dear Sir,—I am induced to send you the "Ohio Farmer," edited by Mr. Thomas Brown, Cleveland, Ohio, in which is published a letter from one of his correspondents in England, on short-horned cattle. In the first place, let me tell you that this paper has been a vehicle for praising American short-horned cattle ever since its commencement. The most extravagant and extraordinary accounts have appeared in it from time to time, accompanied with a long list of pedigrees and portraits—in almost every paper he issues. Examine one portrait, and the animal is made to appear without a fault; examine the whole of them, and all correspond as if copied from the first, varying only in colour. This *one style* the artist has adopted (who is a short-horned breeder) for the "Ohio Farmer" and "American Herd Book." The policy of making *all of them alike* is to attempt to effect uniformity in the breed, which no man on earth can do honestly if he tries his whole lifetime. I have seen most of the originals he portrays, and have never seen but one bull amongst them with level crops and strait paunch, two very important points in the value of an animal, in my opinion; more especially of the male. I, as a Hereford breeder, would not breed from male or female with hollow crops and extensive paunch, as I will defy any man to show me first quality of flesh or richness of milk connected with them. This paper also constantly contains declamatory articles from short-horn men—mere assertion and individual opinion, *without the least proof;* made purposely to puff and keep up extreme excitement amongst men who have, and who have not the means, neither the judgment, to select first-quality cattle, but who give extortionate prices by note of long date or cash, as the case may be, for the purpose of supporting the name of their favourite breed. This delusive system has been the theme of Mr. Thomas Brown's paper; he does not publish a word in favour of other breeds, more especially the Herefords, or unfavourable to shorthorns. But the editor of the "Short-horn Herd Book" wrote a very interesting letter for the "Ohio Farmer" on short-horns in general. This brought other short-horn men into the field, one of which would not acknowledge any other *true breed* of cattle but short-horns, Ayrshires, and Devons; the former breed having names in number too numerous to mention. You see by the letter from the editor of the "American Herd Book" the various names they might be called, if necessary; you also see that Mr. Cassius M. Clay has written some valuable essays on this breed of cattle. In one of them he says, "I once had a herd of short-horns; this family" (as he terms it) "was very delicate—would not stand our climate. I sold them all off, and have now purchased another family more robust and hardy, which I consider the best family of cattle in the world," and continues in this style without one single proof to maintain his position, and then concludes that the "*Durham*" (for that is the name he chooses to call them) "*is the best breed of cattle.*" You will also see in the same paper that the author of the "Short-horn Herd Book" is to exhibit at the Ohio State Fair *Devon cattle.* No man has praised short-horns more extravagantly, more frequently, or more *prooflessly* than this editor. No man has spoken or written more in favour of their profitableness; still he does not maintain it by continuing them. He is now a Devon breeder, on a farm, he says himself, "as rich as land can be made: river bottom, and as black as his hat." I can send you a letter with this statement from him; so he has no excuse for abandoning them, if all he said is true. He will not acknowledge "Coates's Herd Book" as an authority; copies his pedigrees from him, and than denounces the book, which has caused disunion amongst short-horn men here: those who acknowledge Coates's will not register their cattle in his. How this is going to terminate remains to be proved. He publishes the following to extol short-horns. Will you be kind enough to say if it originated in England, as I cannot believe "John Bull" would allow himself to be led astray in publishing such deceit, for he must be aware it could not last any longer than time for the bubble to burst; it is not the character of "John Bull" to do such things. I copy from "Mr. Allen's Herd Book" the following (page 59):—Hutchinson says, "No breeders acted with so much foresight and sound policy, for who but themselves would have thought of feeding any animal from calf-hood until seven years of age in so extravagent a manner as the white Durham heifer and Durham ox were fed, and made *monsters* of! the scheme was a deep laid one, and succeeded to a miracle. She, as well as the Durham ox, was shown all over the kingdom, and raised the character of their breed in the opinion of the world to the highest pitch of eminence." In this enlightened community we should condemn over-high feeding, for every one who breeds cattle knows how much mischief and wrong this over-feeding has done in every country; it has been the very curse to *good breeding.* Now tell me whether Hutchinson is a "John Bull" or a "Yankee." In the same herd-book the weight of this noted ox was given when killed at eleven years old, and fed to the utmost extreme until the day he was slaughtered: beef, hide, and tallow, 2,620lbs. Soon after these puffs appeared in the "Herd Book" I sent some of the weights and ages of Mr. Wm. Heath's prize Hereford steers, given to me in a letter from him, which were as follows. I reduce them to pounds to correspond with the weight given above:—A 2 years 10 months steer, 1,280lbs.; 4 years 8 months steer, 1,876lbs.; 3 years 9 months steer, 1,764lbs.; a pair of twin steers, 3 years 11 months, 1,806lbs. and 1,892lbs.; a heifer, 4 years 10 months, 1,344lbs.; 3 yrs. 11 months steer, 1,906lbs. These were the weights of the four quarters. Mr. Richard Rowland sent me the weights of two of his Hereford oxen, which were as follows, and said those were about the weights that his late uncle Mr. Westcar's Hereford oxen used to weigh. I chanced to have by me the weights of this noted grazier's Hereford oxen that took first prizes at Smithfield in 1810, '12, '13, '14, and '15, as follows:—2,147lbs., 2,059lbs., 1,953lbs., and 2,141lbs.; Mr. Rowland's two weighing 2,080lbs. and 2,160lbs. These weights were beef, hide, and rough fat. I copied these weights, and the time the cattle gained the prizes, &c., and compared the weights with their noted Durham ox; and then asked them to say candidly whether the lightest Hereford steer or ox would not have weighed heavier under the same treatment. I ask you, readers, this same plain question. Short-horn men have been constantly boasting of their early maturity. I asked them to produce a two year-old of the same weight as Mr. Heath's. I often ask them to *prove* what they write and talk about, but they always evade the answer. I sent this Mr. Brown a letter, in answer to several of his, and his correspondent's puffs, giving the above weights, comparing them with the weight of the noted Durham ox, and showing him the fallacy of publishing the quotation from Hutchinson in the "Herd Book." He wrote me he could not publish it, as it would denounce Allen and short-horns. "*These truths were too bitter.*" Such is the character of the "Ohio Farmer;" so you may do as you please about crediting the letter of Mr. Alexander. He says that out of seventy-eight of the best short-horn animals in England there were but three or four of the first class; a second-class bull sold for 300 guineas, and a third-class for 200 guineas. Therefore he admits the three classes in his favourite short-horns with long pedigrees. The extraordinary price taken for "Master Butterfly" speaks plainly for both buyer and seller; no animal in the world can be *really* worth such an enormous sum: such things correspond with high feeding, and are a curse to *good breeding*. Reasonable men frequently pass better animals which are sold at reasonable prices escaping the notoriety. This delusive dilemma—this mania, is an abomination to *good breeding* in both man and beast. Those artificial prices have done much injury in every country; there can be no steady price as long as they last. If England is sunk so low in short-horns, as Mr. Alexander describes, I pity their condition; but I agree with him, that many purchasers who went from this country to buy would give more for a third animal than -classfor a first, because they had no judgment to guide them, nor did they know the true value of the animals they were buying. There are three distinct qualities in all cattle. The first possess a moderately thick mellow hide, with elastic handling flesh. This quality of meat is always beautifully marbled; when hanging in the shambles or stalls, is always free from soft grease, and generally sufficiently stiff to cut smoothly in warm weather: does not diminish much in size when cooking. Second quality carries a thin hide, handles flabby, and when hanging in the shambles or stalls always appears greasy; never sets stiff enough to cut freely, except when frozen, and is very profitless beef to the consumer. Third quality is a thick, stiff, leathery skin, possessing hard-handling flesh, which when hanging in the shambles is as blue as whetstone; their rump bones round and large, with but little flesh upon them. These kind of cattle generally look fleshy if well kept, but never get fat; and when it is on them is no better than ordinary bull beef: frequently large in size, with coarse shankbones, and weigh much lighter when dead than they appear to do when living.

Now, Mr. Editor, as I have given you my ideas of the three distinct qualities in cattle, I must tell you I have found all of them in the best herds of short-horns both in this country and in England flourishing in exaltation with very long pedigrees; and I must further say, that there are more third-class short-horns in Kentucky than any other sort. Mr. Alexander boasts of Kentucky beating England; now hear the other side. My opinion, which I will test against Mr. Alexander's, differs. I was one of the judges on short-horns at Springfield, Ohio, at our National Show two years since. I believe every short-horn in the yard came under my hand, as I look to the quality as the first point. Most of the Kentucky stock had been fed to extreme: among them were the herd of C. M. Clay, of which he boasts so much in his *valuable essays* in the "Ohio Farmer;" and I do say, without fear of *just* contradiction, there was not an animal in his herd (which was numerously exhibited and enormously high fed) that could raise a "*ketch*" on their large round-boned rump, and their skins were as tight over them as if stretched with a pair of pincers. The generality of Kentucky cattle were of this description: third-class cattle. Apparent size seemed to be their object; they cared not about the consumption of food in their rich river-bottom pastures and extensive corn cribs. There were only one cow and three heifers from this state of first quality. The bulls very large and coarse, hollow crops, and large paunches. The best quality short-horn cow I ever saw was exhibited by Dr. Watts, of Ohio, and, I think, imported by him the same year. He had two others of first-class quality. A breeder from Springfield, Ohio, exhibited a bull, "New Year's Day," and a heifer, both of first quality. These were all the first-quality animals in the show yard. Mr. Morris, of New York, did not exhibit. The author of the "Herd Book" wrote an article for agricultural papers in his usual way; said there were "upwards of 200 short-horns on the ground, and those the pick of Kentuchy, Indiana, Ohio, &c., &c.; and that several of them had taken half a score of prizes in their own states."

Now, Mr. Editor, according to the description I have given you of the pick of the short-horns in the principal short-horn states in this union, and as Mr. Alexander says they have been the pick of England, I have only to say, the short-horns, as a breed, cannot be uniform in quality; and for that very fault alone cannot be the *best breed*. I have never been in a breeder's herd of Herefords; but having found uniformly first quality, I send you this letter, with the hope of stirring up a fair and liberal discussion amongst English breeders which breed will pay the most money for the food they consume. I shall be very glad to see America and England contend against each other not only in short-horns, but to endeavour to put that breed *first* that justly deserves it. According to my description of short-horns on this side of the water, there are but few first-class cattle amongst them; according to Mr. Alexander on the other, there are but few there. Hear what Mr. Brown says of Mr. Alexander in the paper I send you:—"English Short-horns.—Those interested in the subject of short-horn cattle must not overlook the excellent letter of our correspondent, who is now in England, and whose opinion deserves influence." In the same column he refers to his sale of short-horns—"He has the largest herd of short-horns in the world, and in it may be found many animals whose superiors have yet to be bred." Thus goes the world; and thus the extreme excitement is carried on *without reason or without judgment*. To see Mr. Brown handle a short-horn in kid gloves would make an Englishman shake his sides.

Yours, &c.,
Wm. H. Sotham.

Troga County, North America.

ON THE FORMATION OF AZOTATES.

BY M. BARRAL.

[TRANSLATED FROM THE FRENCH.]

A remarkable phenomenon in science has recently appeared. A chemist has attempted at one blow to overturn the labours of his predecessors, in regard to the nutrition of vegetables. According to him, plants derive azote directly from the atmosphere: and the azoteous compounds of meteoric waters, and those formed by Nature by means of affinities, the mode of which she keeps a secret to herself, go for nothing. In order to demonstrate this theory of direct appropriation by plants of atmospheric azote, this chemist has contrived an expensive apparatus, got up on a large scale and with great magnificence. There were, certainly, many objections to urge against the results produced with this apparatus, in which vegetation was promoted in air rapidly renewed, the purification of which does not appear to us sufficiently provided for; with waterings with distilled water, the purity of which was equally uncertain, &c. However this may be, a committee of the Academy of Sciences, by the voice of one of its most illustrious and most venerated members, has declared, some weeks since—probably contrary to all expectation on the part of the few votaries of the chemist referred to—that the facts took place much as he had stated—namely, that plants fix the azote diffused in the ambient air, divested of all organic or ammoniacal substance. The report, it is true, contains sufficient reserves to guarantee the imprescriptible rights of truth and science; but these reserves were made with limitations enough to render the triumph apparently complete. This pretended victory was published in all the political journals. Well, a few weeks have scarcely passed, before this triumph, so prematurely announced, has been changed into a complete rout. M. Boussingault—whose doctrines were, above all, called in question with some degree of bitterness—with that power which truth imparts, has contented himself by relating positive experiments, in which the azotate of potash, or saltpetre, had nourished plants which received no other manure. Afterwards M. Cloez has shown that, in porous bodies, especially in presence of alkalies, the oxygen and azote of the atmosphere combine, and form azotates. Foreign chemists, amongst whom we name Messrs. Gunning, Harting, and Mulder, have arrived at the same results—namely, that plants absorb the ammoniacal salts and the nitrates that are found in the soil, by their roots; that the azote of the air contributes to the formation of those salts in the soil, and, by consequence, indirectly to the nutrition of plants; that nothing, hitherto, proves (rather, the contrary) that the azote of the air contributes directly to their nutrition. All the chemists have thus arrived at the conclusion that the air, in porous bodies, gives birth to matters assimilable by vegetables, and more especially to azotes. It is a remarkable circumstance that the chemist who had first hoisted the flag of error relative to direct assimilation, appears to coincide with the general opinion, by seeking, it is true, to make it be believed that he is the author of the discovery of the utility of azotes. On the same principle, the agriculturists might say to the chemists, "You pretend to teach us a thing that we have known and practised from time immemorial. Do not we, by frequent and often deep tillage, place more pulverized and porous soil in contact with atmospheric agents? Do not we say that certain plants appropriate to themselves more of the materials thus stored, by the soil being well stirred?" Undoubtedly, the agriculturists did not know all the azotates produced in the bosom of a tilled soil; but they had found that an aëration of the soil increased its fertility, and it is by this fact that they explained the advantages of drainage. Thus, then, light has sprung up at the very moment at which truth appeared in danger of being obscured. Plants are nourished by the air only after that air has been transformed, not only into ammonia, but still more, into azotates; and this transformation is effected, either in the atmosphere by storms, or in the mellowed and (above all) aërated soil. Rains bring azotates and ammoniacs to the plants, when the physical and chemical constitution of the soil is not favourable to the formation of these compounds—an admirable law of Nature, which wills that species shall never perish, but that their multiplication must be provided for by the efforts and labour of man.

THE WHEAT HARVEST OF THE UNITED STATES.

The returns from the wheat harvest of the United States are now complete, and it is settled that the crop is of most excellent quality, and if not the largest ever gathered since the settlement of the country, is at least above the average, and will yield a large surplus beyond the supply of our domestic wants. With the certainty of such abundance, the probable reliance to be placed upon an active export demand is a subject of much importance, and deserving serious attention. Our imports of foreign goods and merchandise for the eight months of the current year are larger than for any similar period in our history, the total being upwards of 150,000,000 dollars; and although much of this increase has been in consequence of large exports of domestic produce to this date, yet if these exports are to cease with the ingathering of the present harvest in Europe, it might take a larger portion of the receipts of gold than we could conveniently spare to balance the account. Great Britain has always been the best customer for our surplus breadstuffs. To most other countries which take breadstuffs of us, our shipments of flour have been comparatively uniform, whether the crop was large or small, but to British ports the shipments have varied with the quantity we have had to spare, although averaging nearly half the total clearances for all foreign ports. Brazil and the West Indies are regular customers for our flour, as they purchase about the same quantity every year, and, after Great Britain, take the largest quantity in a series of years; but a large portion of our shipments of grain (with wheat and corn) go to British ports. Thus, of 18,583,151 bushels of wheat shipped to all ports from July 1, 1849, to June 30, 1855, 14,061,212 were sent to Great Britain; and of 43,757,597 bushels of corn exported to all ports within the same period, 36,563,951 bushels had the same destination. We annex a tabular statement, showing the exports from all ports of the United States to all foreign ports, of wheat, wheat flour, and Indian corn, both in quantity and value, from 1849 to 1855 inclusive, with a comparison of the quantity of each sent to Great Britain. The totals are all taken from official documents, and may be relied upon as authentic, although it must be noted that of many direct clearances to Great Britain for orders there are sometimes considerable quantities directed from thence to continental ports. The "famine" of 1847 led to large shipments of breadstuffs, and to the inauguration of free-trade in England, and we commence therefore with 1848-9, when the business had become settled under this system. The periods noted are the fiscal years, ending June 30th:—

EXPORTS FROM THE UNITED STATES, OF WHEAT, WHEAT FLOUR, AND INDIAN CORN, FROM 1849 TO 1855, INCLUSIVE.

Year ending	To Great Britain.	To all Foreign Ports.	
June 30,	Quantity.	Quantity.	Value.
1849.			Dollars.
Wheat.. bushels	1,072,780	1,527,534	1,756,848
Flour .. barrels	953,815	2,108,013	11,280,582
Corn .. bushels	12,396,242	13,257,309	7,966,369
1850.			
Wheat.. bushels	316,926	608,661	643,745
Flour .. barrels	370,777	1,385,448	7,098,570
Corn .. bushels	5,957,206	6,595,392	3,892,193
1851.			
Wheat.. bushels	592,583	1,026,725	1,025,732
Flour .. barrels	1,004,783	2,292,335	10,524,331
Corn .. bushels	2,760,329	3,426,811	1,762,549
1852.			
Wheat.. bushels	2,049,557	2,694,540	2,555,209
Flour .. barrels	1,532,094	2,799,339	11,869,142
Corn .. bushels	1,894,700	2,627,075	1,540,225
1853.			
Wheat.. bushels	3,574,248	3,890,141	4,354,403
Flour .. barrels	1,388,065	2,920,918	14,783,324
Corn .. bushels	1,653,840	2,274,009	1,374,077
1854.			
Wheat.. bushels	6,058,903	8,036,665	12,420,172
Flour .. barrels	2,026,121	4,022,386	27,701,444
Corn .. bushels	5,965,850	7,768,816	6,074,277
1855.			
Wheat.. bushels	396,215	798,884	1,329,246
Flour .. barrels	189,712	1,204,540	10,896,938
Corn .. bushels	5,935,284	7,807,685	6,961,571

The ordinary shipments in the past have not included anything direct for France. In the first year named above (1849) there were no exports of flour to French ports, and only 108 bushels of wheat; in 1852 the total includes 2,700 barrels of flour, and in 1853 only 8,784 barrels; but in the year ending June 30, 1854, there were shipped direct to France 1,041,096 bushels of wheat, 728,279 barrels of flour, and 39,400 bushels of Indian corn. In the following fiscal year (1854-5) the shipments of flour to the same ports had dwindled down to 8,557 barrels, and there was no shipment of wheat, but the exports of corn increased to 312,740 bushels. During the year 1855 the partial failure of the crops on the continent of Europe led to large direct shipments, and the total exports to France for 1855-6, not yet officially compiled, have been larger than ever before recorded to the same ports. As soon as the thrashing of wheat commenced in the West and North of France in 1855, its bad quality and light weight created a general panic, and prices continued to advance up to the 1st of January. The abundance caused by the large receipts from this country, Spain, and other sources of supply, caused a downward tendency in prices throughout January, 1856, and everything was promising for the next harvest until the inundations in May. These checked the decline without wholly arresting it; but, as the harvest approached, the hopes of an average crop became less sanguine, and it is now generally admitted that the supply will be deficient from 5,000,000 to 10,000,000 hectolitres—that is, from 14,000,000 to 28,000,000 bushels. The quantity of arable land in France is set down at 56,810,000 acres, of which 14,000,000 hectares, or 34,580,000 acres, are devoted to the culture of grain. The average annual product is 495,000,000 bushels of wheat, oats, rye, maize, and meslin —of which about one-fourth are oats, and two-fifths, or 198,000,000 bushels, are wheat. With an average crop, France has heretofore been able not only to supply her own wants, but to furnish about 5,500,000 bushels of wheat (or its equivalent in flour) for the consumption of Great Britain. It is evident that this export trade must be cut off or greatly reduced during the current year, as the crop in France is below the wants of her own people. Indeed, the total exports to Great Britain from all French ports for the year 1855 amounted to an equivalent of only 880,000 bushels, or about 15 per cent. of the usual shipments, and this was all foreign produce, shipped from bond.

In Great Britain the crop this year is very good, but it is never sufficient to supply the wants of the people. The total imports of breadstuffs into the United Kingdom for the last three years (reckoning flour, &c., at its equivalent in grain) are as follows:—

Calendar year.	Equal to bushels of wheat.
1853......................	84,419,632
1854......................	63,267,240
1855......................	50,227,608

The high prices have contributed to reduce the imports into the United Kingdom during the last two years to the lowest possible point; but for the first six months of the current year the total imports amounted to 1,859,000 quarters, showing an increase of 161,000 quarters, or 1,248,000 bushels, and must continue at about this rate throughout the remainder of the year. Even with a good harvest, the kingdom must need at least 40,000,000 bushels of grain, or its equivalent in flour, for its own consumption. Of this amount, Russia (Northern and Southern ports), whose supplies were cut off during the war, can now furnish 10,000,000 bushels; Prussia (whose harvest is this year below the average) 10,000,000 bushels; all other countries, 5,000,000; leaving 15,000,000 to come from the United States. If prices rule at a comparatively low rate, the consumption will be increased, and the quota from this country may reach 20,000,000 or 25,000,000 of bushels. Spain and Portugal have hitherto exported to both France and England, the shipments to the latter last year being upwards of 4,000,000 bushels. This year, the harvests are there so poor that the export is prohibited, and supplies for consumption in the Peninsula are going forward from this port.

We see, therefore, that in addition to the demand for the breadstuffs from regular customers, we are likely to have an increased export trade to Europe, making the aggregate probably more than 40,000,000 bushels of wheat and corn, or its equivalent in flour.

It is difficult to ascertain the exact production of the United States. The total arable land under actual cultivation is given in the census of 1850 at 113,032,614 acres, of which 51,700,000 acres were producing breadstuffs. The following was the total production of grain as given in the census returns for 1840 and 1850:—

	1840.	1850.
Wheat, bushels ..	84,823,272	100,485,944
Rye	18,645,567	14,188,813
Oats	123,071,341	146,584,179
Corn	377,531,875	592,071,104
Barley	4,161,504	5,167,015
Buckwheat.. ..	7,291,743	8,956,912
Total bushels ..	615,525,302	867,453,967

A very large amount of arable land has been brought under cultivation since 1850, and those most conversant with the West and its increased resources think that the product of wheat has increased at least 50 per cent. since the date last given, while other grain has increased 20 to 25 per cent. The total yield of wheat being computed at 150,000,000 bushels, it is easy to see that the export demand can be filled without creating any extraordinary excitement throughout the country. Last year the farmers anticipated such high rates that many of them refused to sell in time, and thus, to their great chagrin, were obliged to dispose of their stock at the close of the season far below the average price. This year the early sales promise to be the best, but there appears to be a limit below which foreign orders would rapidly diminish any home accumulation. At present good white wheat is worth here about 1 dol. 60 cents, and good red about 1 dol. 50 cents. We scarcely expect to see a decline of 20 cents from these rates during the current season, but within that range an active foreign business may be expected. The prospects for Indian corn cannot be given until nearer the close of the harvest. Flour will fluctuate more than wheat in price; sales have been made to arrive in England at a price which would net here about 5 dols. for standard superfine, but this is generally thought to be an inside price. We have compiled from the official records a statement of the average export price of flour in each year since 1800. The highest was 14 dols. 75 cents per barrel, at which all the shipments averaged in the year 1817. The lowest was 4 dols. 24 cents which was the average of 1852. The following is the average of the total shipments to all ports in each year for the last 20 years :—

YEARLY AVERAGE PRICE OF THE EXPORTS OF WHEAT FLOUR FROM THE UNITED STATES TO FOREIGN PORTS FROM 1836 TO 1855.

Year.	Price.		Year.	Price.		Year.	Price.	
	dols.	c.		dols.	c.		dols.	c.
1836	7	50	1843	4	50	1850	5	0
1837	10	25	1844	4	75	1851	4	77
1838	9	50	1845	4	51	1852	4	24
1839	6	75	1846	5	18	1853	5	60
1840	5	37	1847	5	95	1854	7	88
1841	5	20	1848	6	32	1855	10	10
1842	6	0	1849	5	35			

The periods above noted are the Government fiscal years, ending the 30th of June. The average for 1856 is not yet made up, but will be considerably below that of 1855. If any think that we have over-estimated the present production of wheat in this country, we have only to remind them that the cultivation of this grain for export received but little stimulus until the repeal of the English Corn Laws in 1847, and that the export trade has since rapidly grown into importance. This trade has contributed more to the importance of New York, as a commercial emporium, than is generally acknowledged, and is likely to increase in magnitude for years to come.—*New York Journal of Commerce.*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

The progress of harvest work, during nearly the whole of the month, has been somewhat rapid, and it must be satisfactory to learn that most of the wheat secured in the whole of our leading districts has been in fair condition. On the all-important question of the yield, much diversity of opinion still prevails, and we believe that until thrashing has been more generally carried on, it will be difficult to ascertain with any degree of accuracy the acreable produce in certain localities. In our last month's report we took occasion to condemn some of the statements which had reached us, and we have now every reason to believe that we had just grounds for our condemnation, because, from the most extensive inquiries made in every county in England, we firmly believe that the aggregate growth of the entire country has been miscalculated ; in other words, we are fully convinced that the crop, as to quantity, has proved a fair average per acre. Where it was secured at a dry period, the sample has turned out extremely well, though, on the other hand, we frankly admit that the condition of the wheats, as a whole, is by no means fine. That the farmer's purpose cannot be assisted by the promulgation of questionable reports, must be evident to all who have from time to time studied the question of supply and demand. For what, we will ask, is our present position ? We have, we contend, secured an average crop of wheat in England; but is that any reason why prices should be low ? The altered circumstances of the country have completely exploded the theory—for such, in point of fact, it has become—that an abundant harvest in this country is sure to be followed by low prices. We must carefully consider the extent and prospect of our importations, and the ability of the consumers to purchase food ; further, we must bear in mind that our population is increasing far *beyond* our means of production, and that the manufacturing interest of the country is in a state of unexampled prosperity. Let us give an instance of this. The exports of home manufactures this year have exceeded those of last year by about £15,000,000 sterling ; and, judging from the present rate of shipments, we imagine that they will be larger by the end of the year than in 1846 by £50,000,000 sterling ! Now, the merest tyro in politics must at once admit that this is direct evidence of great prosperity, and that, as a necessary consequence, the consumption of bread has wonderfully increased. It is not, therefore, for us to determine future prices by the actual produce of our own soil, but by the ability of the people to purchase bread, and of the foreigner to furnish us with overwhelming supplies of grain. Throughout the country there is nothing but prosperity : wages are rising, and the imports from abroad speedily pass into consumption without any accumulation of stock. Thus the agricultural body have numerous and good customers ; and upon this ground—seeing that our importations are not likely to be in excess of the demand—we maintain that it is impossible that wheat can be selling at a low price in this country, unless indeed general distress should follow as the result of commercial depression. Upon this head, however, we have nothing to fear. The immensity of the produce of gold in Australia and California forbid any opposite conclusion. But we are told that the produce in question is affording no relief to this country, because it leaves us nearly as fast as it arrives. This is a great error, and one which should be corrected. True, gold is leaving us rapidly, but this is one of the surest tests that commerce is flourishing. The commercial body, ever alive to the wants of the times, naturally desire to turn their means—viz., gold received in payment for manufactured shipments—into raw produce, to carry on even more extensive operations. Gold, therefore, is sent away to purchase cotton, wool, hemp, hides, tea, sugar, and other articles, by which the commercial industry of the world may be benefited and extended. In this way, therefore, we may look forward to many additional customers for the farmer, and increased instead of a diminished consumption of the better kinds of food will be the certain result.

The quantity of wheat produced in France this year is certainly not an average, and consequently heavy imports of food will be necessary to meet consumption. France will, therefore, be a competitor with us for wheat for several months, and evidently much of the grain shipped from the sea of Azoff will find its way to Marseilles; indeed it is evident that the only country in a position to ship largely is America. The outflow will, no doubt, be extensive; but we shall unquestionably consume all that arrives without depressing prices much below their present level.

Very unfavourable accounts have been received respecting the potato crop; we firmly believe, however, that not a few of them have been written for a purpose. As yet, the actual losses from disease are trifling—certainly not in excess of last year; and when we consider the immense breadth of land under cultivation, we are led to conclude that there will be no scarcity of sound potatoes during the winter months. To us, it is absurd to endeavour to keep up prices by unfavourable reports which do not bear the stamp of authenticity. The value of produce requires no help of this kind; that will be regulated by the demand.

The yield of barley is generally admitted to be good; but many samples are proving unfit for malting purposes, owing to the heavy rains which fell during harvest time.

Oats, beans, and peas are a large growth, both as to quantity and quality.

The second crop of hay has turned out large; and, as the first cut was by far the largest ever recollected, there will be no want of good feed during the next eight months. The hay trade has, consequently, become heavy; but old qualities, from their scarcity, are selling at high prices.

The cattle markets have been seasonably well supplied with stock as to number, though its quality has continued inferior. The demand has continued healthy, and prices have been well supported. The imports from abroad, owing to the French demand having partly ceased in Holland, have been on the increase compared with some previous months. The turnip crop has wonderfully recovered, and there is every prospect of a large return for the stock in the whole of our grazing counties.

The wool trade has been tolerably healthy, but we have no change to notice in the quotations. The late extensive sales of colonial wool have passed off extremely well. From the 1st of January to the 31st of August the total imports of wool into England amounted to 280,856 bales, against 235,407 bales in the corresponding period last year. The excess is, therefore, 45,349 bales.

The growth of hops has turned out large; and prices of all kinds have consequently given way. In the Borough the best qualities are not worth more than £5, and inferior parcels may be purchased as low as £2 15s. per cwt.

There has been a good business doing in linseed and cakes, at very full prices. The imports of the former article from India have fallen off.

The greater portion of the crops have been secured in Ireland and Scotland; and our reports, with very few exceptions, speak favourably of the yield.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Most of the leading markets held since we last wrote have been seasonably well supplied with both beasts and sheep as to number. Their general weight and condition, however, have exhibited a falling off, compared with many corresponding periods of the year. The immense consumption of food has enabled salesmen to dispose of the animals without difficulty, and prices have been well supported. It is gratifying to observe that the stock upon most farms has suffered very little from disease, and that the present value of both beasts and sheep is highly remunerative. There is only one drawback to the graziers' interests, viz., the high value at which linseed and cake are likely to rule for a considerable period. There is, unquestionably, a large quantity of natural food on hand; but the present system of feeding deeply enters into the the question of value of artificial food. The close of the war with Russia led some persons to imagine that we should have linseed considerably lower, and that close was viewed by the shippers in India in the same light; consequently, we are now receiving much less linseed from Calcutta and Bombay than we can easily consume. The arrivals from Russia, too, are as yet considerably less than was at one time calculated upon; still our impression is that, as compared with wheat, the exports from St. Petersburg will be large, though not in excess of our wants. The same causes which affect the value of wheat are operating upon linseed, viz., increased use and consumption. Linseed oil at the present moment is worth 42s. per cwt. on the spot, an unusually high price for the article; but the question is—Shall we have it cheaper? The decline in the arrivals of tallow during the war with Russia led to the introduction of oil and gas in numerous parts of England as a substitute; that substitute is still continued. Consequently the oil trade has wonderfully increased in importance, and that very fact will continue to create a demand for linseed, and materially assist to keep up its price; indeed, it is a question with us whether we shall not have it dearer as the winter more nearly approaches.

The annexed return shows the importations of foreign stock into London during the month—

Beasts	7,084	head.
Sheep and Lambs	23,605	,,
Calves	2,772	,,
Pigs	1,559	,,

IMPORTS AT CORRESPONDING PERIODS.

Sept.	Beasts.	Sheep.	Lambs.	Calves	Pigs.
1855......	7,161	22,744	613	1,646	2,266
1854......	7,805	26,230	748	1,894	2,281
1853......	8,372	28,845	273	2,535	1,498
1852......	6,619	34,759	1,132	2,388	1,847
1851......	6,177	28,556	2,075	2,518	1,994
1850......	5,556	19,802	1,939	1,819	752

Thus it will be seen that the arrivals of sheep, compared with 1853 and 1852, have been very small. At Hull, about 10,000 head of each kind of stock have come to hand.

The total supplies shown in the Metropolitan Market have been—

Beasts	24,002	head.
Cows........................	485	,,
Sheep and Lambs	132,014	,,
Calves	2,452	,,
Pigs	2,800	,,

COMPARISON OF SUPPLIES.

	Beasts.	Cows.	Sheep and Lambs.	Calves.	Pigs.
1855....	24,767	540	152,120	2,477	3,921
1854....	24,896	542	174,171	2,760	3,465
1853....	27,063	518	157,750	3,037	3,170
1852....	24,911	490	148,680	2,934	2,980
1851....	23,007	600	169,390	2,220	3,447
1850....	22,212	475	173,450	2,491	2,639

Some very good stock has come to hand from Ireland, viz., about 3,500 sheep and 1,620 oxen. The prices obtained in London are calculated to increase the supplies from the sister island.

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire have amounted to about 12,000 shorthorns; and from other parts of England, to 4,000 of various breeds. The total Scotch supply has been under 200 head.

Beef has sold at from 3s. to 4s. 10d.; mutton, 3s. 8d. to 5s. 2d.; veal, 3s. 8d. to 4s. 10d.; pork, 3s. 6d. to 4s. 8d. per 8lbs., to sink the offal.

Comparison of Prices.

	Sept., 1855.				Sept., 1854.				Sept., 1853.			
	s.	d	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef, from	3	4 to	5	0	3	0 to	5	0	2	10 to	4	6
Mutton ...	3	4—	5	0	3	0—	5	0	3	2—	5	2
Veal.........	3	10—	5	2	2	10—	4	4	3	6—	4	8
Pork	3	6—	4	6	3	4—	4	8	3	4—	5	2

Rough fat, owing to the decline in the value of tallow, has fallen to 2s. 10d. per 8lbs. Last year, at this time, it was worth 3s. 2½d. Newgate and Leadenhall have been fairly supplied with each kind of meat, which has sold steadily as follows:—Beef, from 2s. 10d. to 4s. 4d.; mutton, 3s. 4d. to 4s. 8d.; veal, 3s. 4d. to 4s. 6d.; pork, 3s. 6d. to 4s. 6d. per 8lbs., by the carcase.

NORTH OXFORDSHIRE.

Now that the blessed old English anthem of "Merry, merry harvest home" has been shouted at every farm-house and homestead throughout the county, possibly a few words may be ventured on the subject. It would be superfluous to say much about the past weather, for on that matter what one knows all know. Up nearly to the edge of harvest, the cereal and leguminous crops promised an abundant yield, but about that time the weather became intensely hot, and the wheat grain, being then in its soft and pulpy state, dried too quickly, and became shrivelled and stunted. There is a great abundance of all cereal straw, but the yield of wheat is as variable as is the climate; in some isolated cases it turns out very well, perhaps rather above an average; but generally, both as to quantity and quality, it will be far below what was once anticipated; but it was got together in excellent condition. Barley a great yield per acre, rather thin in the grain, a little stained, and in some situations a good deal sprouted. Beans an abundant yield, of finest quality, and carried in surpassingly fine condition. Potatoes, especially in low situations, whether ripe or otherwise, are sadly diseased; fully half the crop is irretrievably lost, which is quite a calamity to the working classes. Turnips, swedes, and mangolds a luxuriant crop, and still growing apace, which, added to an abundance of succulent well-gathered hay, will supply almost a redundancy of winter food for feeding and store cattle.—Sept. 19.

WARWICKSHIRE.

"Hip, hip, hip, harvest home!" is now the cry throughout the length and breadth of the land, and a glorious harvest we have had; particularly so for the latter harvest, and the wheat that is being offered for sale is in good condition. No doubt in the spring there will be some rough damaged samples, produced mostly by being carried too soon. We have made many inquiries from growers who have thrashed and from buyers who purchase largely, and all agree that there is a full average crop of wheat to the acre and much more than an average quantity of land planted, so that there must be over an average in quantity of wheat, and this we fully believe to be the case throughout the Midland Counties. Of the crop of barley, as to the yield we cannot yet give an opinion, there not havingbeen enough thrashed; the quality is most various, from very fine to very bad, the latter being that which was cut when the rain came. We find that which was ripe, but not cut, will be better than was expected, and if well winnowed will make a fair sample. Beans are very fine and dry, we do not remember ever seeing them so white; we do not think they are an average crop, but sufficient are not thrashed to judge by. The fine weather keeps all hands busy in the field, paring and burning; the land ploughs in splendid condition for planting vetches, which many are doing; indeed the whole work upon the land is in a forward and satisfactory state—one great point for another year. The markets are rising, owing to the small quantity of wheat offered, all being so much engaged. We think those who can thrash now should take advantage of the rise. There is an abundance of keep, and much there will be now up to the end of the year; second crops of clover are being got well, good in quantity and quality.—Sept. 18.

NORTH RIDING OF YORKSHIRE—CLEVELAND.

Since our last report we have had a month of slow harvest weather—cold and dull, and occasionally varied with showers. On the 6th and 7th inst. a great deal of rain fell, followed by a week of close and rather warm weather; and in consequence sprouting in the stook has in partial instances taken place, but we cannot think to an extent to do any appreciable amount of injury. Since the 14th a strong breeze has been blowing from the N.W., which has nicely dried up the wet, and on farms where any quantity had previously been cut, carrying is progressing rapidly. We should say, however, that at this date, in this district, fully one-half of the corn is yet to cut, and some fields have yet the green hue; so that, be the future state of the weather what it may, we cannot but have a late ingathering. The wheat crops cut up fully as bulky as was anticipated, and the heads are generally well filled. Other sorts are also cutting up well, and should the weather prove propitious, we must have a full average yield; but as yet we lie under the mercy of the elements. Irish labourers are very plentiful—more so than they have been for some years. Probably their number may not be more than we generally have, but on some farms they are now little wanted, owing to the reaping-machines being much used in this locality. Several of McCormick's, by Burgess and Key, have been started here this harvest, and their work has given to the purchasers much satisfaction. We could say more on the subject, but demands from the harvest-field call us away. We must add, that the potato disease is reported as very virulent.—Sept. 18.

PEMBROKESHIRE.

We never have had better weather for harvest operations than this year. The crops in some parts are very heavy, but in many other parts of the county they are small in quantity, yet good in quality, and expected to yield well in thrashing; but in some parts along the coast great damage has been done by the storm of July 7th, so that many fields are good for nothing, and some left ungathered. The potatoes in some fields are as bad as ever, but in most of them are much better than they have been since the commencement of the blight, and appear now green and healthy.—Sept. 20.

CALENDAR OF AGRICULTURE.

This is the general month of sowing wheat. Plough and sow daily. Open the water-furrows and cross cuts without delay, and make clear passages for the water to the side-ditches. Steep the seed wheat in stale urine or in some saline liquid, skim off the light grains, and encrust with quicklime, and sow immediately by the hand or the drill-machine. Put gates and fences in repair, and shut up the sown fields for the winter.

Prepare, by fallowing, the lands intended to be sown with early green crops next year.

Raise potatoes from the ground during dry weather by hand-fork, pull and carry the haulm to the dung yards, carry the potatoes to a dry place, form the heaps longitudinally and about four feet high, cover with turf and earth, and thatch with straw. Secure mangold wurzel, carrots, and parsnips in a similar way, and remove from clayey loams the crops of ruta baga, to make way for the land being sown with wheat. Give the tops of Swedish turnips and of beet-root to cattle and sheep moderately at one time, in order to prevent hoving. Plant potatoes with farm-yard dung on fallowed lands; drill widely and deeply to protect the sets from frosts.

Put rams to the ewes—1 to 50—and place each lot in a separate field; give them turnip tops and of beet, which will much promote the salacity. All aged, unsightly, and ill-shaped animals and bad thrivers, and those ewes that missed lamb the last year, must be rejected for the purpose of breeding, and supply their place with the same number drawn from the ewe lambs now 18 months old. Much care and discrimination must be exercised in assorting qualities for the purpose of propagation. Mark the rams on the brisket with red paint or with black pigment, which will mark the ewes on the rump, and enable the shepherd to put marks on the ewes regularly as they are impregnated. This mark being affixed every fortnight, will be found very useful in the spring in housing the ewes for lambing, and in preventing any lambs being dropped unknown and unseen. Ewes must be got into fresh condition for the tupping season.

Sheep are smeared with some liquid ointment during this month, to kill vermin, and to prevent rubbing and tearing of the fleece; tobacco liquor is much used, mixed with a small quantity of spirit of tar. The most approved mode dips the sheep in Bigg's composition dissolved in water, dipping the animals for a few minutes, and then drying them on bare clean ground; it kills all vermin, and very much promotes the growth of the wool.

The lambs will require the assistance of artificial food in the end of this month, as the grass will begin to fail. On dry turnip lands, confine the animals on spaces of the crop divided by hurdles or by stakes, and give fresh spaces as the others are finished; but if the lands be wet or poachy, carry the turnips daily to the animals to a dry lea or stubble field, and cut off the roots in the field where they grow: the sheep intended to be fattened will require turnips in a similar way.

The bullocks that are foremost in condition must be tied up in stalls singly, or placed in yards, two or four together, simply supplied with turnips, with the tops and roots cut away. Give the tops to the store ewes, and to young cattle; the latter must be placed in yards, six or eight together, and carefully fed and well littered.

Feed milch cows with cabbages, and the tops of turnips, and of beet-root; give hay and straw in chaff, or steam the roots and chaff in mixture; juicy food is indispensable for the secretion of milk.

Begin to fatten hogs for bacon; use steamed food of meals and potatoes mixed, and finish with hard corns.

Get the manure pit in readiness, fill it with earthy and vegetable matters, in order to absorb the urinary liquid, and clean out all the culverts that lead from the cattle yards to the tank. The absorption of urine by the earthy substance is the best way of using the liquid matters. Tanks should be roofed over, as the exclusion of light is found to encourage putrefaction.

We refer with pleasure to the notice of a subscription, set on foot by the parishioners of Ermington, for the purpose of testifying their sincere respect for the Rev. T. C. James, upon his retirement from that parish. We cannot but connect the useful career of that gentleman, as set forth in the notice, with the remarkably effective speech which he delivered at the Chelmsford dinner of the Royal Agricultural Society of England, on behalf of the Labouring Classes, and which all our readers must so well remember. A speech that did eternal honour to the head as well as to the heart of the man who enunciated it. A speech that was calculated to produce its effect upon all who heard or read it, who possess "the heart to feel and the hand to give." Such a speech from a clergyman who himself has practically endeavoured to fulfil, in the limited sphere he occupies, the duties he enjoins upon others, cannot fall to the ground without producing its result; and we may consider it the harbinger of better times for the labourer, when his moral and intellectual, as well as his physical welfare will occupy the minds of those with whom he is more intimately connected, and produce that amelioration of his condition which it is the duty of property to promote.

We are not aware of the nature of the testimonial proposed to be presented to Mr. James; but if it be a piece of plate, the most appropriate motto for it would be that inscribed under the portrait of a worthy French ecclesiastic of the last century, who, like Mr. James, devoted the whole of his time to the improvement of his parishioners:

"*A le Prêtre comme il devait être.*"

To the Priest as he should be.

TESTIMONIAL TO THE REV. C. T. JAMES.—It having been made known to the parishioners of Ermington and other friends that the Rev. C. T. James is about to leave this parish, they desire not only to express their regret thereat, but also to testify, by a token of their esteem and regard, their appreciation of the honesty with which he has conducted the services of the church, his kind and useful aid in all parochial matters, particularly the schools, which under his superintendence, have attained to that efficiency lately noticed by the public inspectors, as well as the good feeling he has exhibited and established in the district, for which purpose Capt. Edwards (of Ludbrook), Mr. Pearse (of Thornham), Mr. Sparrow (of Cleeve), Mr. Toms (of Erme Villa), Mr. Lang (of Caton), Mr. P. Toms (of Coyton), and Mr. Harben, master of the schools, will be happy to receive subscriptions.

METEOROLOGICAL DIARY.

Barometer.			Thermometer.			Wind.		Atmosphere.			Weath.
1856.	8 a.m.	10 p.m.	Min.	Max.	10 p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
Aug. 22	29.55	29.95	56	63	51	North	gentle	haze	cloudy	fine	showery
23	30.10	30.14	45	65	55	N. by W.	gentle	fine	sun	fine	dry
24	30.15	30.10	52	66	59	W. by S.	airy	fine	fine	cloudy	dry
25	30.05	29.88	56	66	62	S. West	strong	cloudy	cloudy	cloudy	showery
26	29.94	29.97	56	67	60	W. by N.	gentle	fine	sun	cloudy	dry
27	29.87	29.87	57	67	62	N. West	gentle	cloudy	sun	cloudy	dry
28	29.90	29.78	55	67	64	W. S. W.	brisk	cloudy	cloudy	cloudy	showery
29	29.91	30.14	56	70	56	Westerly	gentle	fine	sun	fine	dry
30	30.19	30.04	48	72	58	S. West	fresh	fine	sun	fine	dry
31	29.97	29.92	57	72	58	West	n. calm	cloudy	sun	cloudy	rain
Sept. 1	29.92	29.76	50	68	55	W. by N.	gentle	fine	fine	cloudy	dry
2	29.93	30.18	50	67	52	N. by W.	gentle	fine	sun	fine	dry
3	30.29	30.28	43	68	56	N. by W.	calm	fine	sun	fine	dry
4	30.26	30.10	49	68	52	S. East	gentle	fine	sun	fine	dry
5	30.02	29.90	47	69	51	S. East	gentle	fine	sun	fine	dry
6	29.81	29.72	46	67	55	S. East	lively	fine	sun	cloudy	rain
7	29.77	29.90	49	68	56	West	gentle	fine	sun	cloudy	dry
8	29.94	29.94	47	69	58	Variable.	calm	fine	sun	cloudy	dry
9	29.94	29.90	47	69	60	S. S. E.	gentle	fine	sun	cloudy	dry
10	29.94	30.02	56	73	61	S. S. E.	gentle	fine	sun	cloudy	dry
11	30.11	30.16	59	68	58	S. S. E.	airy	fine	cloudy	fine	dry
12	30.20	30.17	56	70	57	N. E. & S. E.	airy	fine	sun	fine	dry
13	30.11	30.07	52	60	50	N. W., N.	var.	cloudy	cloudy	fine	showery
14	30.16	30.24	48	64	49	N. by W.	gentle	fine	sun	fine	dry
15	30.23	30.18	45	65	56	S. W. & N. W.	lively	fine	fine	fine	dry
16	30.18	30.15	55	65	55	N. West	lively	fine	sun	fine	dry
17	30.02	29.86	51	65	50	W. S. W.	lively	fine	fine	cloudy	nt.shwry.
18	29.86	29.87	49	60	52	N. West	lively	cloudy	fine	cloudy	dry
19	29.88	29.95	44	58	47	N. West	gentle	fine	sun	clear	showery
20	30.0	30.12	41	54	48	N. & Easterly	lively	fine	cloudy	fine	showery
21	30.10	29.70	39	61	52	S. West	brisk	fine	cloudy	cloudy	showery

ESTIMATED AVERAGES OF SEPTEMBER.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.41	29.41	76	36	57.8

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
66.16	48.74	56.73

WEATHER AND PHENOMENA.

August 22. Heavy masses and a shower.—23. Nearly calm at sunset.—24. Windy and changeable.—25, 26, 27. Fine harvest days.—28. Clear after a shower.—29. Masses at sunset.—30, 31. Harvest weather; a sprinkle of small rain twice on the 31st p.m.

LUNATION.—New moon 30th, 11h. 14m. forenoon.

September 1. Fine; massy clouds; lightning.—2, 3, 4. Harvest weather; hot sun.—5. Brilliant.—6. Showers.—7 to 12. Great similarity, frequently heavy masses, and gorgeous red sunsets.—13. Cloudy—a brisk shower.—14 to 16. Weather equable; cooler.—17. Night a copious shower, yielding ¼-inch of rain-fall.—18, 19. Keen air.—20. Trifling drizzle.—21. Fine till evening; short rain.

LUNATIONS.—First quarter 7th, 3h. 57m. afternoon. Full moon 14th, 2h. 8m. afternoon. Last quarter 21st, 5h. 48m. morn.

REMARKS CONNECTED WITH AGRICULTURE.

The harvest of England has, by consentient evidences, been concluded propitiously. This is a great and merciful *fact!* May it be duly appreciated! The rains that have fallen (amounting in August to 2.664 inches, and in the three weeks of September to 0.75 inch, by my gauge), have really been of great value, advancing the growth of the roots, fodder crops, and pasture grasses. Some trifling *discoloration*, and perhaps a microscopic sprouting may have been discernible; but really, it were most reprehensible and ungrateful to complain. The enormous crops of hay, clover, and straw, should also be borne in mind.

Croydon, Sept. 22. JOHN TOWERS.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ASHBOURN FAIR.—There was a scarcity of horned stock and customers. Fresh and good beasts sold well. There was a good supply of sheep, but altogether business was very dull, from the above-named reasons.

BANBURY MONTHLY FAIR.—The sheep penned were between 4,000 and 5,000 in number, nearly all of which were in prime condition. The fat mutton trade was rather dull, and brought only from 4s. 6d. to 4s. 8d. per stone. Stores, of which there was a large supply, sold quickly at 35s. to 45s. The fair was well supplied with fat cattle, which brought prices equal with the mutton; and store cattle are selling well at former quotations. The horse fair was better supplied than usual with good working horses, but the sale was not very brisk.

BEDALE FORTNIGHT FAIR.—The show of stock of all descriptions was not so large as usual. Beef was rather better sold than on the previous fortnight. No alteration in mutton. In holding cattle the prices are held up; but in sheep the old high rates cannot be got, consequently little was done in them. Beef, 6s. 9d. to 7s. 6d. per st.; mutton, 6d. to 6½d. per lb.

BLANDFORD FAIR.—The supply of sheep was upwards of 2,000, in which few sales took place, at prices 4s. to 5s. per head lower. The show of horses was very inferior.

BRAMPTON FAIR.—The show of lambs was very large (estimated by many at upwards of 10,000), and comprised in the greatest numbers the smaller class of Cheviots, or what are termed "mid lambs," together with about equal portions of half-breds and crosses and a good sprinkling of black-faces. Half-breds were not numerous, and the better kinds met with a good demand, at prices from 18s. to 22s. Cheviots were not so easily disposed of, at from 7s. to 11s. 6d., while crosses and black-faces were picked up at prices similar to those of previous lamb markets. Two-thirds of the entire number of lambs would change owners before the close of the day. Upwards of sixty Leicester tups were penned for sale, many of which were selected at £3 5s. and £7. Very few cattle appeared on the ground. Such, however, as were young, forward in condition, or likely to prove good milkers, were eagerly inquired after, and brought high prices. In the pig department the greatest activity prevailed. There were 27 cart-loads, for which unprecedentedly high sums were obtained. The smallest representative of the porcine species could not be bought under £1, while any animal with the slightest pretensions to a pig for size and weight could not be secured under 26s. or 27s.

CHELTENHAM FAIR.—There was but a short supply of stock. The show of horses was very indifferent, and little or no business effected. The onion fair was but scantily supplied, and the prices ranged from 1s. to 1s. 6d. per peck, the latter being for pickling. Beef averaged 6½d. to 7½d. per lb.; mutton, 6d. to 7d.

EGREMONT FAIR.—High prices were demanded early in the day, but buyers did not seem inclined to accede to them; consequently, the fair was retarded, till at length a great many exchanged hands at a little reduction. Early calvers in great demand, and in general were purchased before they reached the town.

FINDON FAIR was tolerably supplied with sheep, lambs, and beasts. There were plenty of buyers, consequently prices were well maintained; in fact, purchasers in many instances thought things were too dear. Lambs sold well, the fair not being overdone with them. 22s. 6d. was given for some of Mr. Elliott's. Culla fetched 18s. and 19s. 6d. Mr. Wood sold his ewes for 30s.; but Mr. Duke's ewes fetched 38s. 6d., which we hear was the highest price obtained for ewes. There were from 10,000 to 11,000 sheep penned. Pigs, at ten to eleven weeks old, fetched from 16s. to 18s. Horned cattle sold at high prices, and horses fetched very high prices.

GLOUCESTER MONTHLY MARKET.—There was a good supply of beasts, and their condition was greatly improved. There was also a large attendance of butchers, and prices remained firm. In sheep the quality was inferior, consequently the quantity was quite equal to the demand. In lambs little doing, the season having gone by. Prices may be quoted as follows:—Beef, 6½d. to 7d.; mutton, 6½d. to 7d.; lamb, 7d. to 7½d. per lb.

HOOLEY FAIR.—The show of sheep, chiefly hogs and crack ewes, was large; but not so large as on former occasions. Half-bred hogs went somewhat down, being from 11s. to 14s.; crack ewes would average from 11s. to 13s. 6d.; wethers, Herdwick, which were in good condition, brought about 21s. each, but this was the top price. Calving cows were very good to sell; bullocks were rather slower. Horses were rather good to sell. There was a great number of sheep left unsold.

IRON ACTON GREAT FAIR is noted throughout Gloucestershire and adjoining counties, as well as part of South Wales. The attendance was unusually large, and horses and colts of all sorts were offered for sale in large numbers, but they met a brisk demand at extraordinary prices. Good colts of all kinds, for which the fair is well known, were readily disposed of; sucking ones of the cart breed from £18 to £20 each, and in some instances £22; and two-year-old colts fetched from £35 to £40 each. Good cart-horses, staunch in work, brought from £40 to £45 each. Fat cattle were very scarce, and realized from £3 to £3 3s. per cwt. There were very few heifers for sale. Some rather poor Irish ones fetched on an average £7 10s. each. Sheep also were not plentiful. Some stock lambs fetched from 28s. to 30s. per head. Pigs were also scarce, and fetched very high prices; even poor stores making from £3 to £3 10s. per head. There were no "meaty" ones for sale.

KELSO ANNUAL TUP MARKET.—The buyers were numerous, and the stock was, upon the whole, in excellent condition. It was supposed that there would be 500 short of last year. Up to twelve o'clock the sheep was supposed to average at the different rings from 10s. to 15s., and in some instances 30s. above last year's prices, this no doubt arising from the short supply. The average was allowed to be, up till one o'clock, over the three rings, from £5 to £8. After that hour, the buyers being partially supplied, prices went a little; and up to five o'clock, when the sales were exhausted, the market did not recover itself. The following are a few of the sales: Mr. Fairbairn sold Mr. Thomson's, of the Forest, 23 sheep; amount of sales, £137 2s. 6d.; the lowest sheep £3 5s., and the highest £21. Mr. Robertson, Springwells, 50 sheep, £3 to £7; amount of sale, £231 5s. Messrs. Rinddoch and Co., Coteswaldes, 10 sheep, £5 to £15 10s.; amount of sale, £72 10s. Mr. Johnstone, Kennetside-heads, 20 sheep; £2 12s. 6d. to £3 10s.; amount, £61. Mr. Nisbet, Lambsden, 50 sheep; average, £5 16s. 5d; amount, £291; £3 10s. to £11. Mr. Syme, Mindrum Mill, 22 sheep, £2 17s. 6d. to £4; average, £3 9s. 9d; amount, £41 17s. 6d.

KERRY (WELSH) FAIR.—The supply of stock exhibited was large; sheep in good condition. Cows, calves, and good bullocks sold well; other sorts scarcely as much in demand.

KNIGHTON FAIR was literally thronged with sheep. The new market, which holds something like 10,000, was filled completely; in fact, several pens had to be erected in the streets. In the horse market we had a very fair show, but not so many as at last fair. Some noble specimens of bullocks were shown, together with a good supply of cows; in fact, there was more stock than there had previously been since its formation. Sheep sold rather lower than last month.

LUTTERWORTH FAIR.—There was a good supply of fat and store cattle, all of which met with a ready sale, at very good prices. The supply of sheep was somewhat less than usual, and we are told that none remained unsold. The number of horses and ponies was somewhat more than we have seen on previous occasions, and most of them were eagerly purchased at good prices.

MALDON FAIR was well supplied with stock, there being considerably more than last year. Of beasts, there were Herefords, Scotch runts and Welsh beasts, and a few Devons. Of sheep a large number were penned. Of horses, Messrs. Fairhead, Keys, and Dowsett, produced some fine animals. Up to three o'clock very few sales were apparently made in any kind of stock, which was attributed to the high prices asked for everything. Towards the close of the day, greater activity was evinced, and a great deal of stock changed hands. Very high prices were asked for horses; and for one pair as much as eighty guineas was required.

MASHAM FAIR.—The supply of fat sheep was good, but buyers were not so numerous as in former years, and the prevailing high prices caused sales to be slowly effected. Mutton, 6½d. to 7d. per lb. Mr. John Lightfoot, Howe; Mr. Matthew Imeson, Low Ellington; and Mr. John Kendall, Warren House, each showed a pen of twenty fat and well-bred shearing wethers, which were much admired, and sold for 60s. each and upwards. The show of lambs was not so large as that of last year. They were in fair demand and well sold. There was a large show of fat bullocks, the trade in which was tolerably active. Buyers were numerous, and all were sold at extreme rates: Beef, 7s. to 8s. per stone. Of the lean kine there was about an average number, with a limited attendance of buyers, and part remained unsold. The trade in calving beasts was brisk, and all nearly changed hands at good prices.

MOFFAT TUP FAIR.—The show of rams was much below the numbers of last year in Cheviots and Leicesters, but especially the latter. The number of the respective classes were: 644 Cheviot rams, 65 Cheviot tup lambs, 88 Leicester rams, 66 blackfaced rams, and 28 tup lambs; total, 891 head. Last year 1,191 were shown. Cheviot rams ranged from £3 to £5 for the common run, and from £6 to £15 for the best class. Mr. M'Call, Bunance, sold the latter figure for a two-year-old. Mr. Paterson, Tenona, sold two two-year-olds at £10 each. Mr. Welsh, Kirkton, sold a two-year-old at £10. Cheviot tup lambs were bringing from 25s. to 40s., and blackfaced tups from 30s. to 50s. The supply of Leicesters being scanty, sales were readily effected at £5 to £6 for the best. Mr. Bell, Biggarts, disposed of several Yorkshire tup shearlings, at that price—in a few from £3 to £4.

MORETON-IN-MARSH FAIR.—A large number of dealers again attended; but the supply, so far as beasts were concerned, was not equal to the demand. Upwards of 1,500 sheep were penned, and nearly all sold. Mutton 6½d. to 7d.; stock ewes fetched as high as 48s., and lambs sold at 29s. Of beef the supply was not large; sold from 6½d. to 7d. per lb. Stores nearly all sold at good prices.

MUIR OF ORD MARKET.—There was a large number of sheep. There were few buyers, and sales were not readily effected. The general tendency to decline in the prices of sheep in southern markets influenced this market. Many of the sheep exhibited to-day left unsold, and some proceeded south in the hope of making a better market at Falkirk or Braemar. There were not many lots of superior sheep present, and parties who went to the Muir of Ord to purchase sheep for killing, complained that the lots, for this purpose, did not suit as to condition. A lot of black-faced wedders, belonging to Mr. Gordon, Glenaich, may be said to have been the finest on the Muir. They were unsold, 27s. being asked, and 23s. offered: they have been sent to the Castleton Braemar market. The finest lot of Cheviots were purchased by Mr. Calder, Inverness, from Mrs. Captain Fraser, Baldoan, at 20s. per head. Mr. Chapman bought a lot of ewes at 14s., and a lot of lambs at 4s. Mr. Cameron, Guisachan, bought a lot of lambs, black-faced, at 8s. 6d. Mr. Macintyre, Clunes, bought a lot of lambs, black-faced, at 6s. There was a considerable number of cattle, though good lots of crosses were scarce. The market was, in a great measure, made up of small lots of inferior beasts, and buyers could find few lots suitable to take away to the southern markets. The finest lot of stirks exhibited were those belonging to Mr. Donald Horne, of Langwell, for which £12 was asked. Mr. Dudgeon, Fodderty, sold a lot of crosses at £16 16s. A fine lot of Caithness crosses were sold at £14. Mr. Moffat sold a lot at £10. Messrs. Sutherland and Munro a lot of 20 queys at £7 15s., and another lot of 26 at £10 5s. Mr. Fraser, Muirfield, purchased a lot at £11 11s. Mr. Cameron, Tomcrasky, sold a lot of 6 quarter olds at £6 15s. In Highland cattle little was done; the demand was very slow, though Mr. Oliver and other gentlemen exhibited some very superior lots.

NORTHAMPTON FAIR.—There was a good supply of fat sheep. Best wether mutton made from 4s. 6d. to 4s. 10d. per 8lbs., and fat ewes 4s. to 4s. 4d. Of fat beef there was a good show, with rather a dull sale at from 4s. to 4s. 6d. There was an immense number of store sheep, lambs, &c., and good selected lots sold readily at about former prices. Store beasts were in rather limited supply, and consisted of Devons, Welsh, and home-breds, with a few Herefords. Most of them were sold at fair prices. Of new milch cows the show was good, with plenty of buyers, and a great many were sold, prices ranging from 12*l.* to 10*l.* There was a fair supply of all descriptions of horses, including some very useful animals, and a good business was done.

OSWESTRY FAIR was but thinly attended with stock of every kind. Buyers were numerous, consequently a sharp sale was effected, pigs commanding a good price. Beef made 6½d. to 7d., and mutton 6d. to 7d. per lb.

PENRITH FORTNIGHTLY MARKET was well supplied with sheep and cattle; the latter in very middling condition. There was a slow demand, and to effect sales the prices of the last fortnight were submitted to, at which a clearance was effected. Pigs were sold in our market last week at 6s. a-head reduction from former rates, viz., 14s. to 20s. 47 cart-loads were shown.

WESTON ZOYLAND FAIR (one of the best heifer fairs in Somerset).—The attendance of dealers was astounding. It was computed that if all the bullocks had been divided amongst all who came to buy, there would not have been half a bullock a-piece. Of course, under these circumstances, the top price was realized—nothing under 12s. a score.

WILTON (ST. GILES') FAIR.—The number was rather large, there being upwards of 100,000 penned. The trade for all descriptions was by no means fast, but still there was a small advance upon the late fairs, and a good clearance was effected, leaving but few lots unsold at the close of the fair. Wethers fetched from 30s. to 40s., ewes 26s. to 36s., and lambs from 18s. to 28s. Some prime lots at much higher prices. The Earl of Pembroke's prizes were awarded by Messrs. Futcher, Hart, and Phillips:—1st prize, for the best pen of 100 ewes, to Mr. James Rawlence, of Bulbridge Farm, which sold at 51s. per head; 2nd prize, for the best pen of 100 wether lambs, to Mr. W. Bennett, of Chilmark, which fetched 40s. per head. The highest prize for wethers was obtained by Mr. James Raxworthy, of Codford, which fetched 53s. per head. The ram fair was about the usual quantity, and rams sold and let readily at good prices. The cattle fair was about as usual, and sold well. The show of implements was considered to be very good. The horse fair was also well supplied, good ones selling at higher prices.

WORCESTER GREAT ANNUAL HOP, CHEESE, AND CATTLE FAIR.—This great annual fair for the sale of hops, cheese, and agricultural stock came off on Friday. The hop fair, which is usually the most prominent part of the business, was small, on account of the failure of hops this year in Worcestershire and Herefordshire. Only about 200 pockets of new hops were brought in by the planters, of which 59 pockets only have passed the public scales, the prices ranging from 78s. to 85s. per cwt. The market was well attended by purchasers from various parts of the kingdom, and there is no doubt the whole would have been cleared off but for the high prices demanded. The quality generally is good for first pickings, and well managed, but all complain that they come down much lighter than was expected, and the duty for the district is not likely to exceed £7,000. Yearlings are in better demand, and the prices have an upward tendency. Of cattle there was but a short supply. Cows and calves (very scarce) sold at 15*l.* to 16*l.*, barrens 12*l.* to 16*l.* The average about 6½d. per lb., with a dull sale. Nearly 6,000 sheep were penned, but many went back unsold; prices 6½d. to 7d. per lb. Store ewes sold at 2*l.* a head, and others at 35s. to 45s. A good show of rams of the Cotswold and other breeds. Fat pigs were scarce, but stores were plentiful. Horses were numerous, and chiefly of the class used for agricultural purposes. Nags were but indifferent, and there were not a few "screws" and roarers in the market. The cheese market has considerably fallen off of late years, the practice becoming prevalent of dealers buying up the stocks direct from the dairymen at their homes. Most of the cheese pitched in the market was from dealers. Prices good—best, 60s. to 66s., two-meal, 40s. to 42s., and skim 28s. to 35s. per cwt. The pleasure fair was abundantly supplied, and the demand good.

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF SEPTEMBER.

So far as England is concerned, the important period of harvest-time may be considered over, with a more favourable result than once expected; though the fear of sprouting, when the weather was unsettled, occasioned too much hurry in stacking, and a very large proportion of the crop is so impaired in condition that it cannot be used without an admixture of old foreign, the little English left over being quite insufficient for this purpose. The actual damage by sprouting appears to be but a moderate per-centage, and, as the imports have been liberal, and the American crop is fine and dry, the farmer will suffer more in price than the public in the quality of the loaf. The northern harvest is not yet complete, a prevalence of wet obtaining in Scotland when it was fine in the southern parts of Great Britain; nor has Ireland yet finished her gatherings, the western provinces having still much corn in the fields. The reduced temperature, however, will considerably lessen the danger of vegetating. Potatoes, too, which once promised so fair, have partially yielded to wet weather; and the late-sown pieces in cold soils throughout the kingdom have shown a considerable increase of disease. With about an average crop, therefore, an average importation seems necessary, and low prices appear improbable, as the markets in France are rising, as well as those in America, and the Prussian ports are now at such a range as to almost prohibit exports. In Finland, too, this is actually the case; while the Peninsula is making a weekly demand on our stores. Fluctuations in price have characterized the past month as well as its predecessor, the first fortnight exhibiting a course of decline. partially recovered in the last, though the balance has been against prices about 5s. per qr. on the best samples, and 3s. more on inferior descriptions.

The first Monday of the London market opened with liberal supplies of foreign wheat, principally from Russia, and a fair portion of English. The morning's samples from Kent and Essex were also plentiful, chiefly new, and the weather being fine, a serious fall ensued; the best qualities obtaining about 4s. less money, and the worst selling with difficulty at a reduction of 7s. per qr.; good qualities of old yielding in price at a proportionate reduction, and foreign being totally neglected. The country markets all gave way; Hull, which submitted the least, quoting 3s. to 4s. less, with a fair demand; while many, as Birmingham, Leicester, Derby, and Wakefield, made the fall 10s. to 12s. per qr. on new wheat. Liverpool, in the course of the week, fell 8d. to 1s. 3d. per 70lbs., the greatest reduction being on new Irish samples. London, also, at the Friday's market, was looking for a farther serious abatement, factors not being able to quit their samples.

The second Monday fully realized the fears of holders, there being an accumulation of English through the previous week, though foreign arrivals were but moderate, as was the case with the morning's supply from the near counties. Under the prevailing influence, the best samples did not obtain within 5s. of the previous Monday's rates; while inferior and out-of-condition were quoted 6s. to 8s. cheaper, with difficulty in clearing, some portion being undisposed of at the close of the day. Samples of old, as well foreign as English, participated in the decline, though not to an equal extent. The country markets again responded to this report, but not fully. Birmingham was rather looking up from the previous depression, as well as Hull. Bristol and Gloucester were 4s. to 5s. down. The decline at Boston was only 1s., with a brisk sale. Liverpool, however, exceeded the London decline in her first report, making the fall 1s. 3d. to 1s. 6d. per 70lb., but recovering partly from it on Friday, by 2d. per bushel of 70lb. The town trade showed some improvement on that day, from the limited quantity on show.

The third Monday, on small supplies, both foreign and English, exhibited a reaction to the extent of 3s. to 4s. per qr., though the few samples from Kent and Essex were of inferior quality. The previous reduction also brought up a goodly number of country buyers, whose inquiries were in favour of low Russian wheat for mixing; and, accordingly, a smart business was effected, at full prices. The upward movement went through the country; and every market was more or less improved, the lowest advance in any important place being 2s. to 3s., and the highest being 5s.; Liverpool, in the course of both markets, though with some difficulty, selling at 3d. to 6d. per 70lbs. increase, fine new American realising the greatest advance.

The fourth Monday—without heavy supplies in general, and with but a moderate show from Kent and Essex—found a change, millers and buyers for seed limiting their operations to the purchase of the few really fine samples that appeared, while all below this description hung on hand, though factors would have readily conceded an abatement of 2s.; the week closing without any further alteration. But country advices were generally dull, and, on an average, might be quoted 2s. to 3s. below the previous week; Liverpool finding a fair trade on Tuesday at a decline of 3d. per 70lbs.

Prices in Scotland have not been so fluctuating, their reaping time not having commenced so early, and stocks being small when the English markets were falling; while the late unpropitious weather has sustained the value of fine old and new American wheat. The Irish market, also, though bare till recently, did not exhibit such changes, though both countries have been in partial sympathy with England.

The state of the foreign markets have been far steadier: white Polish, at Stettin, brought 65s.; red, for spring delivery, was 55s. per qr. Among foreign ports, perhaps Hambro' has been most excited; but has since calmed down, with prices 69s. 6d. to 70s. 6d. for good new. France has only lately advanced her prices of wheat, and that after a continental decline; and it is only by the last advices from America that an enhancement is noted there, and that only to the extent of about 2s. per qr.—the present quotations at New York for new red Western being 1 d. 50 c. to 1 d. 60 c. per bush. (51s. 6d. to 54s. 9d. English, at 62lbs. per bush.); new white, 1 d. 65 c. to 1 d. 70 c. (56s. 9d. to 58s. 6d. English, at 62lbs. per bush.); white Canadian, 58s. 6d. to 61s. per qr. In the Danube, new Wallachian wheat has brought 44s. 4d., but freights are high. At Alexandria the price of Saide wheat rules about 39s. At Odessa, supplies were accumulating, but good qualities were scarce. The foreign importations for the month of August were large, amounting to 507,533 qrs. wheat and 478,286 cwt. flour. The London supplies for the first four weeks in September were 30,772 qrs. English, and 63,682 qrs. foreign; which shows an increase over the previous month of 14,225 qrs. home-grown, and a decrease from abroad of 48,743 qrs., the new crop, and the fall ensuing, diminishing the foreign arrivals. The arrivals of flour show a similar result; the month having brought in 41,787 sacks from the country, which is 9,600 sks. more than in August, and the foreign being 57,536 brls., which is 21,120 brls. and 320 sacks less. The weekly sales to 27th August were only 40,895; the last were 106,353, showing the points of exhaustion and replenishment. The exports for the four weeks were 10,563 qrs.

The country and foreign flour trade, as is always the case, has been in sympathy with that of wheat; but town millers do not so regulate prices, either in times of decline or advance. Though the country supplies have increased by about 2,500 sacks weekly over August, they are still about as much below those of June. The first Monday commenced with a fall of 5s. per sack on Norfolks, and 1s. to 2s. per barrel on American; but town samples were unchanged. The second Monday noted a further decline of 2s. on country samples, and 1s. on foreign barrels, when town millers reduced their top price from 64s. to 60s., Norfolks ranging at 46s. The third Monday was a day of reaction, country sorts having rallied 4s. per sack, and American being quoted 1s. to 2s. higher. On the fourth Monday Norfolks fell into disfavour, being reported as partly made of kiln-dried wheat, and they consequently fell to 48s. per sack, only rallying 1s. at the close of the week; but neither American nor town-made underwent any alteration—the latter remaining at 60s. per sack, which is just 1s. below the top price in Paris.

The supplies of English barley during the past month have trebled the quantity of August; but those from abroad, being drawn from old stores, (which almost everywhere are exhausted), have been somewhat less. The English amounted to 6,971 qrs.—more than half being supplied in the fourth week: the foreign were 19,366 qrs. During the month the best malting quality has dropped fully 4s. and inferior sorts 6s. per qr., the highest price commencing at 50s. and closing at 46s. The bad weather has greatly reduced the condition of the samples, and fine dry bright quality must be in small compass, very little yet coming to hand, and the breadth having greatly given place to wheat. The first Monday, with a scanty supply of home-grown barley and a fair arrival of foreign, was dull for all kinds, without change of quotations. The second Monday, though still with insignificant English arrivals, and very limited foreign, noted a decline of 1s. to 2s. per qr., which fall was repeated on the third Monday for both malting and other kinds; and a similar reduction was noted on the fourth Monday for secondary and low foreign, which now having descended to a parity with oats, can scarcely be expected much lower, especially as in all the Baltic ports, Russia itself included, rates are comparatively high, though much advance can scarcely be expected from the relatively low price of Indian corn, which daily increases in favour.

Old malt has neither been affected by the rise or fall of barley, stocks being very limited, and prices throughout the month have not varied, though little business has been passing: 840 qrs., however, have been exported.

Oats, also, all through September have maintained an even course—every successive Monday bringing its report of unchanged rates; the Russian supplies, as well as the expectation of being more liberally furnished with samples of the new crop, having kept prices where they were; but, as a whole, the foreign arrivals have been very moderate, not reaching to half those of August—the total being 58,163 qrs.: the Irish only 8,789 qrs., which scarcely varies from August by a fraction—the supply of English new, though still light, rising to 5,182 qrs., half of which arrived in the fourth week. The Irish markets not yet shaping their course to English quotations, large supplies at present are hardly to be expected thence, or from any foreign ports excepting Holland.

Beans show a great falling off, both in English and foreign arrivals; the latter were expected to be short, in consequence of the long time taken in the clearing of the Mahmoudieh canal in Egypt, which prevented any craft reaching Alexandria. The new produce now arriving plentifully, trade will resume its course; but at present the rates are too high, the quotations being 30s. 3d. per qr. Samples of English new are very sound this season, and when the ordinary period of large consumption begins—unless we have large Egyptian arrivals—prices may go higher. Through the month quotations have been firm, but not dearer. The English supply has been only 854 qrs., and the foreign 835 qrs.

Peas have been more plentiful, our own growth being 1,112, and the foreign 2,997 qrs., which, however, were nearly all white, and principally from Canada. This source of supply being scarcely looked for, has rather increased the dulness in the sale of white boilers, and somewhat reduced prices, say 1s. to 2s., have been taken; but those for pig feed have been well sustained.

Linseed, with some help from Russia, has scarcely found the imports equal to the demand, foreign exports and the home consumption of oil and cake being liberal, and all have contributed to a further enhancement of its value, the third and fourth Mondays making together an advance of 3s. per qr., with some improvement in cakes; nor does there seem any immediate probability of prices receding, the crop in Southern Russia being short, and in the more northerly parts backward and critical, necessarily preventing any liberal shipments before the setting in of frost. Canary has advanced about 4s., the rise taking place as the month closed. White mustard-seed, which was reduced to 10s. per bush. by the first reserve of crushers, has since risen to 12s.; but the sale has been checked by the advance: the crops being short was the reason for the rise. Winter tares, after much neglect, have found a brisk demand at 6s. to 6s. 6d. per bush., and even more is now demanded. Hempseed has maintained its value. Different opinions prevail as to the probable turn out of the crop of English cloverseed, and large heads have certainly appeared on the plants, indicating plenty; but we fear the early frosts have done some mischief, and that our chief dependence will, as usual, rest on foreign supplies. The French crop of red is said not to be plentiful; white is too high-priced yet in Hambro' and Holland for speculation before the season here; trefoil is mostly in growers' hands, who must not expect last year's prices. In rapeseed, carraway, coriander, and other seeds, a moderate business has been passing at full rates, the general crop of seeds being considered rather deficient.

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

	Wheat.		Barley.		Oats.		Rye.		Beans		Peas.	
WEEK ENDING:	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Aug. 9, 1856..	76	0	43	3	27	1	46	4	45	9	42	10
Aug. 16, 1856..	71	0	43	7	26	3	44	3	44	4	39	0
Aug. 23, 1856..	68	9	44	7	27	11	43	8	44	8	38	11
Aug. 30, 1856..	70	8	45	1	27	0	44	1	45	4	39	11
Sept. 6, 1856..	73	2	47	6	27	4	43	1	45	5	40	9
Sept. 13, 1856..	69	6	46	8	25	10	43	9	45	4	41	0
Aggregate average of last six weeks	71	6	45	1	26	11	44	2	45	2	40	5
Comparative avge. same time last year	75	2	34	9	28	7	44	1	47	1	41	4
DUTIES	1	0	1	0	1	0	1	0	1	0	1	0

HOP MARKET.

BOROUGH, MONDAY, Sept 22.

During the past week the trade has been active for Kent and Sussex Hops, the quality and condition of which have considerably improved since the first arrivals. The market to-day is firm, and prices steady, at about the annexed quotations:—

Mid and East Kents	75*s.*, 90*s.* *to* 100*s.*
Weald of Kents	65*s.*, 80*s.* ,, 84*s.*
Sussex....................	63*s.*, 70*s.* ,, 80*s.*

Duty, £245,000.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

MONDAY, Sept. 22.

There is a steady demand for picked samples of Potatoes, at from 84s. to 90s. per ton. All other kinds are dull, at from 70s. to 80s. per ton. The arrivals continue good, and most of the samples are in fair condition.

ENGLISH BUTTER MARKET.

SEPT. 22.

In the past week we had an improvement in the Butter trade, but which seems lost to-day.

Dorset, fine	114*s.* *to* 116*s.* *per cwt.*
Do. middling....................	102*s.* *to* 106*s.* ,,
Devons..........................	108*s.* *to* 110*s.* ,,
Fresh	10*s.* to 13*s.* *per do.*

WOOL MARKETS.

BRITISH WOOL MARKET.

THIS DAY.—Several parcels of English wool have changed hands since our last report, for shipment to the continent, at very full prices. The amount of business doing in all kinds for home use is but moderate. Holders generally are firm, and the quotations are well supported. The supplies are limited.

	Per lb.					Per Pack of 240lb.				
	s.	*d.*		*s.*	*d.*	£	*s.*		£	*s.*
Down tegs..........	1	4	*to*	1	5½	16	0	*to*	17	10
Half-bred do	1	3	—	1	4½	15	0	—	16	10
Down ewes..........	1	3	—	1	4½	15	0	—	16	10
Kent fleeces	1	1	—	1	3	13	0	—	15	0
Combing skin........	0	10	—	1	3½	10	0	—	15	10
Flannel wool........	1	0	—	1	4	12	0	—	16	0
Blanket wool........	0	8	—	0	11	8	0	—	11	0
Leicester fleeces .,..	1	1	—	1	3	13	0	—	15	0

LIVERPOOL WOOL MARKET, SEPT. 20.

SCOTCH WOOL.—There is a better feeling for Laid Highland Wool, and a fair business has been done at prices in favour of the sellers. White Highland is still inquired for, and commands full rates. Cheviots and Crossed are still in less request, from the fact that manufacturers, as well as dealers, had supplied themselves at the clip.

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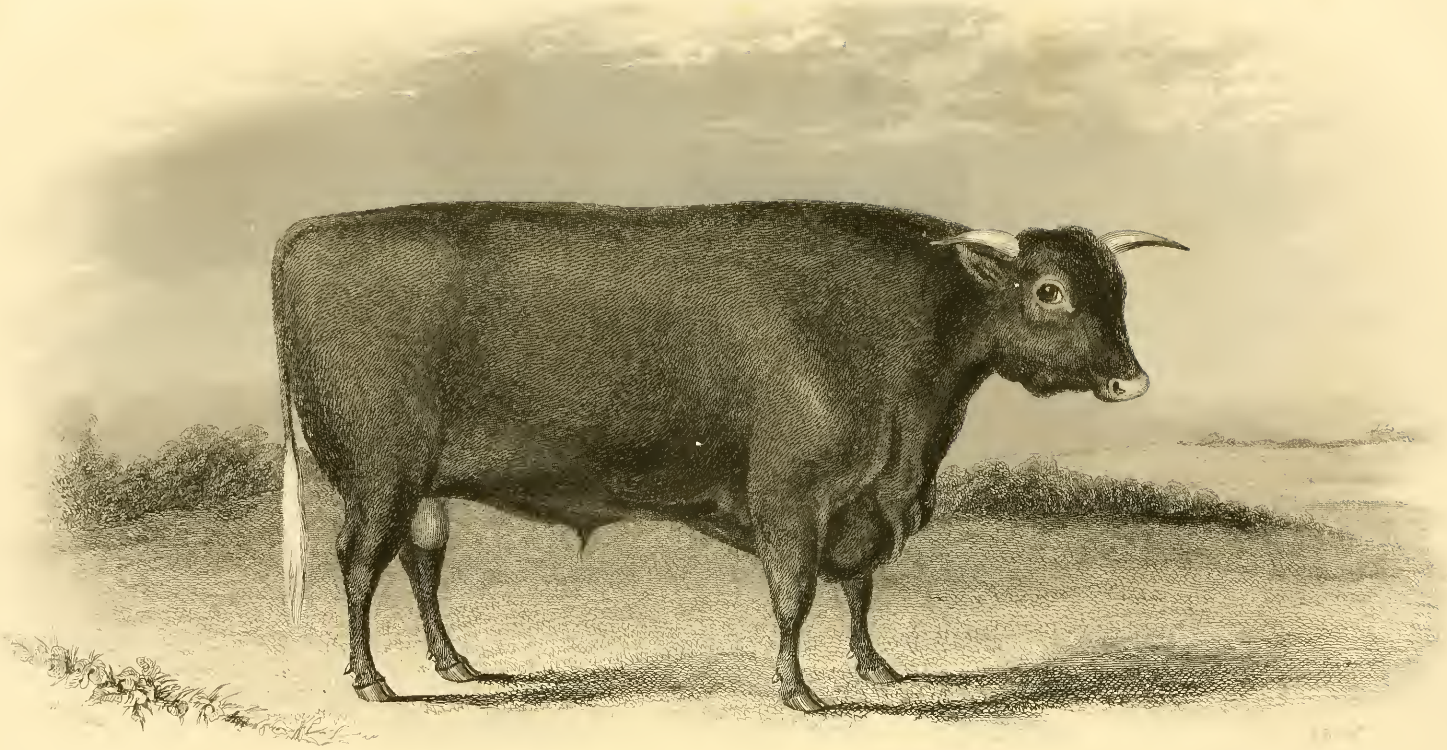

Devon Bull

The Property of [illegible] which won the First Prize of [illegible] awarded at the Meeting of
the R. A. Sy. of England held at Southampton, July [illegible]

[illegible]

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[illegible]

[illegible]

[illegible]

THE FARMER'S MAGAZINE.

NOVEMBER, 1856.

PLATE I.

ZOUAVE; A DEVON BULL.

THE PROPERTY OF HIS ROYAL HIGHNESS PRINCE ALBERT,

For which the first prize of twenty-five Sovereigns—as the best yearling Devon bull—was awarded at the Royal Agricultural Society of England's Meeting at Chelmsford, 1856.

Zouave, bred by Mr. George Turner, of Barton, Exeter, was calved in October, 1854. He is by Abdel-Kader (134 in the Devon Herd Book), his dam Heartsease (219) by Earl of Exeter (38), grandsire Baronet (6) — Violet (466) by Quartley's Prince of Wales (105), — Roundhead, by Forester (46).

In addition to the first prize as a yearling at Chelmsford, Zouave had also, the year previous, taken the first place as the best Devon calf at the Carlisle Show of the National Society.

Zouave is quite a first-class animal. His countenance is very mild and pleasing; his chest, brisket, flank, and under parts excellent; his hips, loins, thighs, tuts, and twist all good and full; his back is straight and level; his chine, perhaps, too narrow; and his horns wide. Altogether, however, he possesses beautifully symmetrical proportions, with a capital quality of flesh, and softness of skin.

PLATE II.

SAUCEBOX; WINNER OF THE ST. LEGER, 1855.

Saucebox, bred by the late Mr. Henry Stebbing in 1852, was got by St. Lawrence, out of Priscilla Tomboy, by Tomboy, her dam Catalani, by Tiger—Wilna, by Smolensko.

St. Lawrence, bred in Ireland in 1837, is by Skylark or Lapwing, out of Ellen, by Blacklock. During the two or three years he has had any trial as a stud horse he has claimed the following winners:—Ben Neder, Ethelbald, Grimalkin, Saquenay, Surprise, St. Spiro, Saucebox, Thames Ditton, and Whitenose. We saw him in Yorkshire last summer, looking still fresh and well.

Priscilla Tomboy, bred by Mr. Kitching in 1839, had a dead foal to Gilbert Gurney in 1850, was barren in 1851, and dropped Saucebox in 1852. She died the day after foaling, and the St. Leger winner was brought up by hand.

Saucebox is a bright bay horse, standing fifteen hands an inch and a-half high. He has a lean blood-like head, and rather short neck—is not over deep in his girth, but has a good back, muscular quarters and thighs, with very clean sound hocks and knees. He has small arms, and is not over large in the bone. Altogether, a neat wiry shortish horse, with no great style about him, but with the especial recommendation of being able to rattle like a shot over hard ground. He has no white beyond a star in the forehead.

THE FOOD OF DAIRY COWS.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

In a recent visit to the New Forest, the condition of the cows which are there depastured seemed suggestive of more than one useful consideration. Of many of the little herds which are wandering in these lovely wooded glades, chiefly of the Jersey or half-bred Jersey breed, it is gratifying to speak. Their condition, when I met them in October, was excellent; their owners were evidently well aware of the old farmer's axiom, that "the best-fed cow pays the best;" they, however, in these cases, had not relied upon the short close-fed herbage of the forest; they were housed at night—they had a supper—and a breakfast before they were again turned on to the open forest. But then there were many other little lots of cows, of whose appearance a widely different report must be rendered; these were allowed to remain out all night, either in fields or in open yards, exposed to the damp air, and resting on ground saturated with moisture, and, as regards their food, subsisting on a herbage far too close for cows. That such was the case was evidenced not only by their appearance, but by the avidity with which they browsed on the woodland shrubs, and the eagerness with which they fed on the fallen leaves of the forest trees, which ever and anon the wind gathered in its little eddies. The appearance of these cows, in short, was that of all neglected stock—coats rough, staring, and dirty; backs sunken; growth of the young stunted. Such appearances as these, I felt, were too common in all those districts where the true economy of cow-keeping is either little understood, or, owing to the want of energy or capital in the little stock-owner, not carefully practised; and it was with these convictions that I resolved to draw the attention of the readers of this valuable magazine to the subject, more especially as a recent paper, by an enlightened Yorkshire farmer, has detailed the result of some long-continued trials on the better feeding of milch cows, which can hardly be too generally known. The great fact that, in far too many cases, the food of the dairy cow is unequal to the supply of the constituents of the milk she produces, and the maintenance of her condition, is not commonly considered as carefully as its importance deserves. It is often hardly suspected that the under-fed cow, to supply her milk with its essential constituents, is compelled to draw upon her own stored-up flesh and fat.

Mr. T. Horsfall, of Burley, in the West Riding of Yorkshire, thus puts the case (*Jour. R. A. S.*, vol. xvii., p. 261):—"In the neighbourhood of towns where the dairy produce is disposed of in new milk, and where the aim of the dairyman is to produce the greatest quantity, too frequently with but little regard to quality, it is their common practice to purchase incalving cows: they pay great attention to the condition of the cow; they tell you, by the high comparative price they pay for animals well stored with flesh and fat, that condition is as valuable for them as it is for the butcher; they look upon these stores as materials which serve their purpose; they supply these cows with food more adapted to induce quantity than quality; they, in fact, pay little regard to the condition of the animal. With such treatment the cow loses in condition during the process of milking, and when no longer profitable, is sold to purchasers in farming districts, where food is cheaper, to be fattened, or otherwise replenished for the use of the dairy keeper. We thus find a disposition in the cow to apply the aliment of her food to her milk, rather than lay on flesh or fat; for not only are the elements of her food diverted to this purpose, but to all appearance her accumulated stores of flesh and fat are drawn upon, and converted into components of milk, cheese, or butter."

It was as to the best mode of feeding the dairy cow, so that her condition and the maximum supply of milk might be maintained, that Mr. Horsfall directed his valuable enquiries; he thus explains one portion of the task he assigned himself:—"It appeared an object of importance, and one which called for my particular attention, to afford an ample supply of the elements of food suited to the maintenance, and likewise to the produce, of the animal; and that if I omitted to effect this, the result would be imperfect and unsatisfactory. By the use of ordinary farmyard produce only, I could not hope to accomplish my purpose: turnips are objectionable on account of their flavour, and I seek to avoid them as food for dairy purposes. I use cabbages, kohl rabi, and mangold wurzel, yet only in moderate quantities. Of meadow hay it would require, beyond the amount requisite for the cow, an addition of fully 20lbs. for the supply of the casein of a full yield of milk, or 16 quarts; 40lbs. for the supply of oil for the butter; whilst 9lbs. seem adequate for that of the phosphoric acid. You cannot then induce a cow to consume the quantity of hay requisite for her maintenance, and for a full yield of milk of the quality instanced. Though it is a subject of controversy whether butter is wholly derived from vegetable oil, yet the peculiar adaptation of this oil to the purpose will, I think, be admitted. I had therefore to seek assistance from what are usually termed artificial feeding substances, and to select such as are rich in albumen, oil, and phosphoric acid, and I was bound also to pay regard to their comparative cost with a view to profit. I have omitted," he continues, "all reference to the heat-supplying elements; starch, sugar, &c. As the materials commonly used as food for cattle contain sufficient of these to effect this object, under exposure to some degree of cold, I have a right to calculate on a less consumption of them as fuel, and consequently a greater surplus for deposit as sugar, and probably also as fat, in consequence of my stalls being kept during winter at a temperature of nearly 60°." With these preliminary explanations, the food of Mr. Horsfall's cows, "after having undergone various modifications, has for two seasons consisted of rape-cake 5lbs., and bran 2lbs. for each cow, mixed with a sufficient quantity of bean-straw, oat-straw, and shells of oats, in equal proportions, to supply them three times a day with as much as they will eat. The whole of the materials are moistened and blended together, and after being well steamed, are given to the animals in a warm state. The attendant is allowed 1lb. to 1½lb. per cow, according to circumstances, of bean-meal, which he is charged to give to each cow in proportion to the yield of milk, those in full milk getting 2lbs. each per day, others but little; it is dry and mixed with the steamed food on its being dealt out separately; when this is eaten up, green food is given, consisting of cabbages, from October to December, kohl rabi till February, and mangold till grass time. With a view to nicety of flavour, I limit the supply of green food to 30 to 35lbs. per day for each. After each feed 4lbs. of meadow hay, or 12lbs. per day, is given to each cow; they are allowed water twice per day to the extent they will drink." He adds, "I have used malt combs, together with bran, half and half, during the present season. Having a larger stock than the year before, with about an equal quantity of hay and less of roots, I reduced the allowance of the former from 12lbs. to 9lbs., and that of mangold from 36lbs. to 28lbs. per day. I gave also 1lb. of rapecake additional to each, 6lbs. in lieu of 5lbs. On this fare, and with such changes of cows as were called for, my yield of milk, of which a register is kept, ranged during the months of October, November, December, and January, at 160 to 164 quarts per day from 18 cows, being fully 9 quarts per day from each cow."

It is of importance to note that the flavour of the cake is not in the least perceptible in the milk or butter. During May, the Burley herd are turned out on a rich pasture near the homestead; towards evening they are again housed for the night, when they are supplied with a mess of the steamed mixture, and a little hay each morning and evening. During June, when the grasses are better grown, mown grass is given to them instead of hay, and they are also allowed two feeds of steamed mixture. This treatment is continued till October, when they are again wholly housed.

By careful monthly weighings of these cows, the effect of the large supply of food in counteracting the drain upon the system of the cows, in the rich milk they produced, was well contrasted. The cows yielding 12 or 16 quarts per day, were found to vary little in weight, the monthly balance being rather to gain; the cows giving less than 12 quarts down to 5 quarts per day, were found, without exception, to gain in weight. This gain, with an average yield of nearly 8 quarts per day, is at the rate of 7 or 8 lbs. per week each. Then, as to another most important branch of inquiry—the increase in the richness of the milk produced from these carefully-fed cows—we learn that in Germany the dairy owners calculate that, upon an average, 14 quarts of milk yield 1lb. of butter; and this is about the produce from the dairies in Wharfdale. They say there, that each quart at a milking represents a pound of butter per week; thus, a cow which gives 4 quarts at a milking, will yield 4 lbs. of butter per week. In winter the produce is lower than this. "The cream from my neighbours' cows (observes Mr. Horsfall), who use common food (hay, straw, and oats), somewhat resembles milk in consistency, and requires three or four hours at least in churning. My own cream, during the winter season, is of the consistency of paste or thick treacle. Several who have adopted my system, have reported similar effects—an increase in the quantity, with a complete change as to richness of quality. Mr. J. Simpson, a tenant farmer of Ripley in Yorkshire, reports: 'In about five days I noticed a great change in my milk—the cows yielded 2 quarts each per day more. But what surprised me most was the change in the quality; instead of poor winter cream and butter, they assumed the appearance and character of rich summer produce: it only required 20 minutes' churning instead of two or three hours'."

The quantity of butter yielded by the milk produced under Mr. Horsfall's mode of feeding, is worthy of serious attention, especially when we

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consider that the average daily produce of milk in England has been calculated to be about 8 or 9 quarts, and that each quart yields about an ounce of butter. From cream, the average produce of butter has been calculated to be about 9 ounces per quart.

Under the high careful feeding at Burley, the produce has varied from 24 to 27¼ ounces from 16 quarts of milk; "I therefore (concludes Mr. Horsfall) assume in my calculation 16 quarts of milk as yielding a roll (25 ounces) of butter." We see, then, that by the feeding system adopted at Burley Hall, not only is the quantity of milk considerably increased, but that the amount of butter it contains is also increased by more than 50 per cent.; so that a cow which, under the ordinary management, yields (say) 4 lbs. of butter per week, will, when fed on the Burley system, produce 6 lbs. of butter. The results of such careful high feeding on the produce of grass in the rich pastures at Burley is most satisfactory. As might be reasonably anticipated, they are tending to increased fertility; "their improvement in condition is apparent."

These are facts not only most important for the farmer, but to the country at large; for if by any improved mode of management, only a small addition can be made to the amount of butter produced by the 376,713 cows which were, in 1854, either enumerated or estimated to be possessed by the farmers of England and Wales, the aggregate increase would be equal to a very large amount of butter. An average increase of one pound per week from each cow, would be equal to, say, 160 tons of butter in every week, or 8,320 tons per annum—an amount equal to about two-fifths of all imports of foreign butter in 1855. The inquiry, therefore, is most interesting in every point of view: it is one, howerer, to which but little exact attention has hitherto been paid, and in consequence we need hardly feel surprised at the vagueness of our conclusions. It is true that the use of oilcake and of bean meal is common in many English dairying districts, but the true objects with which these substances are used has never been till now clearly shown by the aid of the chemist, or the results so certainly traced by the weighing machine. We are all aware of the advances made by the owners of live stock during the present century, in their fattening, and in their other good meat-producing qualities, and it would now seem that similar advances are likely to be generally made in the productiveness of our dairy farms.

THIN SOWING.

We have received from Messrs. Hardy and Sons, of Maldon, specimens of different grain in the straw (wheat, barley, and oats) grown by them, with a request that we would examine them. They are intended to shew the effect of their system of thin sowing, and of more care than is usually experienced in the cultivation. The specimens were placed in the hands of a person well qualified to examine them minutely, and to report upon them, and we now give below the results, with all the details connected with the several parcels; and without pledging ourselves in the slightest degree to the applicability of the system upon a broad scale, we feel justified in saying that those results are such as to deserve the attention of practical men, and a rigid enquiry how far the system of thin and careful sowing or planting of cereals is capable of being carried out generally under the present course of husbandry. It is certain that the application of steam machinery to the various operations of the farm will very soon liberate a vast amount of the labour at present engrossed; and the question is worthy of being entertained, whether a portion of this labour could be better employed than in a more careful attention to the deposition of the seed of cereal plants, and a stricter supervision of their after-growth.

We have abundant evidence of the unquestionable fecundity of wheat and other cereals, far beyond what has at present been developed by the common course of husbandry, and we are inclined to think that the question has not received that consideration, or been experimented upon to the extent it deserves. The subject of the physiology of plants has never been a regular study with agriculturists, and there are but few of them who know anything at all of it, beyond those palpable facts which the common operations of the farm have disclosed. Even the facts thus developed are but imperfectly understood; and the habits of plants, relating to the time and mode of sowing, culture, &c., are made to yield to the convenience of the cultivator, rather than suffer them to involve an additional expense, which would probably be well covered by the increased amount of produce.

Messrs. H. & Co. have also handed us one of their tracts on the cultivation of cereal plants, exhibiting their system in regard to the selection of seed, time of sowing, proportion of seed required, method of culture, &c., the perusal of which is calculated to excite reflection and enquiry in the minds of intelligent and unprejudiced agriculturists. We have yet much to learn on these subjects, *and more to unlearn*, before the fecund properties of our cereal plants are fully known or even credited; still more, before the means and processes by which they may be developed, are received and adopted by the general body of agriculturists.

We submit the following statement, without further remarks, to the consideration of our readers, especially those who have time and opportunity for making similar experiments, and skill in calculating the expense, &c., attending them.

SPECIMENS OF THE PRODUCE OF DIFFERENT CEREALS FROM MESSRS. HARDY AND SONS, MALDON, ESSEX.

Number.	No. of plants.	Distance planted.	No. of ears.	No. of grains.	Average per ear.	Average per plant.	Weight of grain.	Quantity grown.	When planted.	Average produce per acre.
1. Mummy Wheat....	1	1 foot	20	2280	114	2280	3 oz.	5 acres	—	17 qrs.
2. Red Wheat........	—	1 „	10	1120	112	—	2 oz.	1 acre	Oct.	—
3. Ditto do.	4	1 „	113	7240	64	1810	10 oz.	—	—	14 qrs. 1 bush.
4. Ditto do.	—	1 „	100	8600	86	—	7¾ oz.	—	—	—
5. Skinless Barley....	—	—	2	162	81	—	¼ oz.	—	—	—
6. Common Barley ..	1	1 „	82	2040	25	2040	3¾ oz.	—	—	25 qrs. 4 bush.
7. Oats	1	1 „	10	2816	281	2816	2¾ oz.	—	—	21 qrs. 4 bush.

NOTE.—The wheat is estimated at 60 lbs., the barley at 52 lbs., and the oats at 38 lbs. per bushel, which is the full weight of the specimens.

EXPLANATIONS.

"No. 1.—Twenty specimen ears of Egyptian white wheat as cut from one stub, growing at a wide distance casually in a field of five acres.

"No. 2.—Ten ears with thin straw of Hardy's selected and improved red wheat, from one acre transplanted with plants sown by the sparrows in a stubble in August, planted in October at 1 foot apart at little more than ¼ peck seed per acre.

"No. 3.—Four (out of 8) single roots, 240 ears, averaging 35 each, grown casually at 1 foot apart on common ploughed land and no manure, was very foul; 1 peck of seed sown, and thinned out singly quite half, rather blighted.

"No. 4.—One hundred ears of prolific red wheat transplanted on 1 foot square, or little more than 3 pints per acre, rather blighted, as other people's. Estimated produce 6 qrs. per acre.

"No. 5.—Two ears of skinless barley.

"No. 6.—One plant of barley sown ¼ peck per acre, spoiled with the application of strong liquid manure, which caused it to be blighted.

"No. 7.—One plant of (Tartarian) oats, ½ bushel of seed per acre. There are two grains in every husk—twin-like."

No. 8.—By way of contrast we have inspected in the same manner, 10 ears of old Norfolk red wheat, grown at Glandford, which contain 511 grains, weighing 1 1-12 oz., averaging 51 grains each ear. The crop is estimated at 6 qrs. per acre. Quality very good. All the specimens are of this year's growth.

EXPERIMENTS IN SOWING SWEDE TURNIPS AT DIFFERENT TIMES.

SIR,—At Brigstock, near Thrapston, Northamptonshire, I found a piece of Swede turnips upon some land occupied by Mr. Watson Yorke, which had been planted at three different times; the seed was first dibbled in rows 2 feet apart the last week in April; the plants came up fine, but the principal part of them were devoured by the fly. He then sowed broadcast some more seed amongst the plants left, and the principal part of the second sowing were again eaten off by the fly; he sowed a third time amongst the first and second plants left by the fly. Some of the largest turnips of the first growth, which escaped the fly, weighed 7½ lbs. each; the largest of the second growth weighed 1 lb. 10 oz.; and the largest of the third and last planting weighed 1 lb. each turnip, which proves that swedes require a sufficient space, and the whole summer to grow in, to be a large size.

Supposing turnips to be planted 28 inches from row to row, and set out 10 inches from turnip to turnip in the row, there would be, if planted regularly, 22,402 turnips upon an acre, which at

lb.		Per acre. tons.	lbs.
1	each turnip would amount to	10	2
2	„ „	20	4
3	„ „	30	6
4	„ „	40	8
5	„ „	50	10
6	„ „	60	12
7	„ „	70	14

Turnips planted one foot asunder, or one in a square foot, at 1 lb. each turnip, would amount to 19 tons 8 cwt. 3 qrs. 20 lbs. per acre. It is plain the later turnips are sown, the thicker they ought to be left when hoed.

The Earl of Aylesford once grew upon Merridon Heath, near Coventry, when topped, tailed, and cleaned, 40 tons of Swede turnips per acre upon seven acres, and 36 tons per acre upon eleven acres. SAMUEL ARNESBY.

Brigstock, near Thrapston, Northamptonshire, Oct. 13th.

CHURCH HOLDINGS—THEIR INFLUENCE ON AGRICULTURE.

The progress of British agriculture rests by no means with the farmer alone. Manfully as he may play his part, there are others who must have their share in the good work, to advance as we should do. There is, indeed, no other pursuit about which the obsolete impedimenta of a bygone age have been suffered to remain so long. The proper cultivation of the soil may still be spoken to as the first care of the State; but with us, however good in theory, this is scarcely so in fact. The Legislature, which should be the first to encourage, still delights to encumber us. We are allowed yet to go hand-tied—hemmed in and fenced about with all the curious formula of feudal times, while almost every other class is free and unfettered. The honourable members for the agricultural interest, who pat us so encouragingly on the back, might perchance do even a little more than this. If all the country, as they tell us, is not up to that acmè of excellence it should be, there may, strange as it must sound, be something beyond the ignorance or indolence or apathy of the farmer to account for it. This indolence and apathy is often enough all the other way; and agriculture standing still because the Legislature in its wisdom will not take the trouble to let us go forward.

There is nothing very novel in this. It is from no want of asking or complaining that we are still going on as we have gone. The burdens on land—the disadvantageous terms upon which much of it is held—the positive bar to permanent improvement which some kinds of tenure maintain, are all very old stories. Unfortunately, at least in some degree, they are only local traditions. Had the case been a general one, we should have found the remedy, long ere now. There is no reason, however, why those who do suffer should not be relieved. It can only be their own fault if they are not. The course open to them is very clear, and at the same time very orthodox. They must avail themselves of the national privilege, and speak out—talk over their grievances amongst themselves, and induce their great friends to talk of them elsewhere. High-flown generalities run and read well enough; we have had almost our share of them lately. But to speak with effect, and to be remembered hereafter, a man must feel what he says. If he can only illustrate his argument with his own case, or his own neighbourhood, the better still.

We have had, at any rate, one or two such examples during this autumn. Some time since the Royal Agricultural Society, in following out a very excellent practice, offered one of its premiums for an essay on the farming of Durham. In enumerating the information it was desirable to obtain, the Journal Committee in no ways minced matters; but asked directly, amongst other things, for the cause of the backward state of agriculture in that county. It is not so much our purpose here to deal with the manner in which this was answered by the essayist, as to show how it was received in the district itself. The county thus distinguished appears to have fully felt the force of the compliment, and at a recent meeting of the local Agricultural Society, the chairman, Mr. Shearman, especially addressed himself to its consideration. What is the cause of the backward state of agriculture in the county of Durham? Is it the farmers, the landlords, want of intelligence, of enterprise, or of capital, that thus retard improvement? Not one of these causes was ever hinted at. We must seek for the evil in higher places—in the palaces of our bishops and in the cabinets of our ministers. To the one class we turn as the holders and administrators of much ill-managed property; and to the other as having the power to amend what so palpably requires revision. When the editors of the national society's organ point so directly to the bad farming of Durham, their censure falls not so much on the people as the system. The advance of agriculture does not rest here with the farmers, but the Legislature.

But let Mr. Spearman speak for himself:—"He did not think he could introduce the toast of 'The Durham Agricultural Society' more appropriately than by some observations with reference to a subject which, in his conscience, he believed demanded the interference of the Legislature for its adjustment and rectification. He meant the question of the land held in mortmain by our capitular and ecclesiastical establishments, and the system of letting such land on long leases. If they wanted to invent a system for the express purpose of retarding the progress of agriculture in the county or district in which it prevailed, he did not believe that any scheme could be more happily devised to effect that object than the system of mortmain. Existing, as it did, to a most unparalleled extent in this county, it was quite sufficient to account for any backwardness in agriculture, and to answer the reproach under which he regretted to say the agriculture of the county at present lay. He would not enter into the particulars which constituted the injurious nature of the church leasehold system—they were patent and notorious; and he was the less disposed to do so, because the injurious character of the system generally had been 'acknowledged of record,' in legal phrase, by those who had it in their power to afford the remedy, viz., the two houses of Parliament. In 1851 a bill, which afterwards became the Act of the 14th and 15th Vic., c. 104, commonly called the Enfranchisement Act, was referred to a Select Committee of the House of Lords, which reported 'that the enfranchisement of the land would be more advantageous to its good management, and to the development of its resources, and would at the same time promote the interests of the lessors and the lessees.' And this Act, which was but temporary, having required amendment and continuance, it was again referred in the last Session to a Select Committee of the House of Commons, who reported that 'the system of fine for the renewal of leases was an improvident system to the church, as it left the lessees in a state of uncertainty with regard to improvements.' Under the Enfranchisement Act, little, comparatively speaking, had hitherto been done, and for this, amongst other reasons, that though it might be easy to come to an agreement as to the fee-simple value of any given estate, it had been found by no means so easy to arrive at an agreement as to what constituted the respective interests of the lessors and the lessees therein, depending, as that did, on the question of what was the nature of the claim of the lessees to renewal, in law, in equity, or morally considered. On this point, the Lords Committee of 1851 expressed a strong opinion, and offered a recommendation with which he understood the leaseholders were satisfied; and it having been found impracticable this Session to carry through the Legislature the Act by which it was proposed to amend and continue the Enfranchisement Act to 1859, it was continued by a short Act for a year, an express promise having been obtained from the Ecclesiastical Commissioners that *ad interim* the recommendations of the Lords Committee of 1851 would be acted upon. He was glad to be able to say that this promise had been obtained chiefly through the instrumentality of three associations formed in this county, namely, at Gateshead, Darlington, and Stockton. A hope had been expressed by the Commons Committee that so much would have been done in the way of voluntary enfranchisement by the year 1859 as to render it unnecessary to have recourse to compulsory enfranchisements. He wished that might prove so; but however that might be, he hailed with satisfaction the expression of this hope, which appeared to him very like the expression of an opinion that, if voluntary enfranchisement had not by that time proved effectual, that compulsory enfranchisement must then be had recourse to—an opinion in which he perfectly coincided."

The above admirable summary of what has yet been achieved or attempted in the way of enfranchisement will be read with interest by many out of the county, or we should not have quoted it so readily. Mr. Shearman's, however, is one of the few really good addresses of the present season. He speaks earnestly and practically to the requirements of his own neighbourhood, and at the same time with an ability and effect that give his remarks something far beyond a local value only. We have not very long since ourselves dwelt on the evils of church holdings, but we can well afford to follow him a little further on this point. Although the example is here, too, his own county, the application and deduction are unfortunately again as susceptible of a more general reading:—" But something more was required to be done before justice could be done to the county of Durham; and that was to effect a reduction of the mortmain estates of our great capitular and ecclesiastical establishments—a reduction of these estates to such an amount as would cover the fixed income of the members of these establishments. Perhaps it would be thought that the Enfranchisement Act to which he had referred would conduce to this end, but he was sorry to say that this would by no means be the case. By the Enfranchisement Act equal power was given to the lessees to buy up the interests of the lessors, and he had seen a deed prepared where land was conveyed by the lessees to the Ecclesiastical Commissioners with all its rights and privileges. He understood that the Ecclesiastical Commissioners intended to purchase from the lessees the whole of the parish of Ryhope. At present the lessors were only joint tenants of the lessees; but, in course of time, by pursuing this system, they might have all the lands in their own clutches. He was not there to exaggerate the injurious effects of mortmain. He would not say that there was not a countervailing advantage in securing a fit and decent provision for the services of the church. Far be it from him to advocate any confiscation of the property of the church; but what he did say was, that there ought not to exist more mortmain land in any county than was sufficient to pay for the services they received. He was opposed to the rents of one county being carried into other provinces and districts, and added to poorer benefices. The Commons' committee of the last session had recommended that 'landed estates sufficient to afford the clear statutory income of each Bishop should be secured to each see, and that the management of such estate should be in the Bishop;' and this principle is applicable alike to Deans and Chapters as to Bishops. Objections had been taken to this recommendation, and in a very influential quarter; but he must say, that after the best consideration he was capable of giving the subject, he was of opinion that those objections might be answered. He agreed, therefore, in this recommendation; and the more so that it accorded with his own proposition, that after the assignment and setting apart of these estates—of so much, in short, as should be sufficient, but of no more than should be sufficient, to yield the statutory income of the Bishop and of the Dean and Chapter—the remainder should be brought into the market and sold to the best advantage, and the produce of such sales invested by the Ecclesiastical Commissioners in landed security in those dioceses where augmentations are required. We should thus, as regards our great episcopal and capitular establishments, cease to have any mortmain lands in the county beyond what is necessary to yield the future statutory incomes of the members of those establishments; and this, and nothing less than this, will suffice to do that which he had termed 'Justice to Durham'."

Justice to Durham is justice to England. Let this reproach on us all be at once removed. The evil is becoming by this too well known to be much longer suffered in silence, or only occasionally referred to. The Durham Society indeed hints at the establishment of some further association with this for its especial object. We can only say that we shall be happy to render any assistance in our power by giving publicity to its proceedings; and we believe the same spirit would be evinced in other quarters. The Royal Agricultural Society has done good service by thus plainly asking the cause of the bad farming in Durham. Now that this cause is known, let us all join heartily in our endeavours to remedy it. The subject, we repeat, is not merely a local one: its proper adjustment concerns us all.

THE POTATO—ITS CONSTITUENTS AND DISEASES.

As that peculiar infection which first made its appearance in 1845 has again assumed a more aggravated character, I consider it justifiable and right to offer the following suggestions, not only on the proximate cause of the existing attack, but also upon the physical constitution of the potato itself as an article of human food. The first unquestionable symptoms were manifested in the summer of 1845; the Isle of Wight was the locality—about the middle of July. But scarcely had the phenomenon been announced ere all England fell under its influence, and early in August one of the finest plots I ever grew in Berkshire became a victim; the leaves and stems decaying, and emitting a most offensive odour. Surprised at the visitation, some tubers were raised and examined, and of these, some became masses of putridity; the whole crop, in fact, was tainted, with partial exceptions only. Since that time the potato crop has been more or less infected, though in a decreasing ratio; and at length public writers, in the present spring, congratulated themselves and readers upon the recovery of the potato, and the return of its original fine taste and mealy texture! One circumstance of moment ought not to be overlooked—namely, that although the disease retained possession of the plants, the horrible stench of the decaying foliage, and the putrescence of the tubers, ceased in a great degree to prevail. Not, therefore, to dwell upon by-gone facts, we come at once to the present condition of the potato, which, beyond a doubt, is worse than it has been during six or seven years. In many places the tubers already raised have proved so bad that half of the yield, or more, is tainted; and I am sorry to add, upon the authority of an Edinburgh letter, dated 26th September, that there is "a comparative failure of the potato crop." "It will not be nearly so great as in last year, and the disease is far more prevalent and virulent."

Notwithstanding the tenor of concurrent accounts, certain it is that the supply of very excellent and mealy potatoes to the markets is abundant, and the prices moderate; a bushel may be purchased at 1s. 9d. to 2s., and had the crop proved secure, the winter, or latest crops, would have been cheap.

But *how*, and *when*, did the blight take place? Growers hereabout think that the prodigious temperature of from 80° to 85°, and a blazing sun, had made the ground very hot at a time just preceding the heavy fall of rain in the middle of August, which completely soaked the surface to the depth of twelve or more inches. It is asserted that until that event *no taint*—*no black spot*—had been observed. I do not attempt to define causes or consequences, because, to this hour, through a ten years' visitation, we have remained profoundly ignorant. But I *do* venture to say, that were the potato, with its vastly-increasing breadth of cultivation, to remain always in a state of complete immunity, very great danger would be incurred of again relying upon it as a species of *staple aliment*, a *sine quâ non.* It was so considered in Ireland, and a Providential dispensation appeared to give a salutary warning against so strong a delusion. Here then I request the reader's attention to the few following lines, in which I hope to show that, however pleasant and desirable as a dinner-vegetable a thoroughly good potato may be, its nutritious properties are by no means great.

The tubers contain a variable quantity of dry starch; and experiments had, years since, been made by analytic chemists, with a view to ascertain all their constituents. In 1827 I found that

1st. From 8 lbs. of *un*peeled potatoes I obtained—

	lb.	oz.
Amylum, or starch................	1	6
Pulp, pressed by the hand..........	1	11
The loss in watery or soluble matter	4	15

2nd. From 8 lbs. of peeled tubers—

	lb.	oz.
Amylum, or starch................	1	3
Peelings, weighed	1	5
Pulp, pressed	1	14
Loss..............................	3	10

Thus the yield of starch was decreased by peeling; and thence I inferred that potatoes should be cleaned by brushing under water, and then boiled *un*peeled—or as we say, "in their jackets."

"The terms *flour* and *farina* should be rejected. Potatoes contain no flour—in the proper acceptation of the term; their starch is wholly destitute of *gluten*, a substance indispensably required for the production of a mass of dough, which, after being duly fermented and baked, becomes bread." [See "Domestic Gardener's Manual," p. 200.] Now pure starch of the potato, in common with Indian arrow-root, is nearly allied to sugar; and by not containing azote, or *nitrogen*, cannot nourish and support animal muscular tissue. Hence, however starch and sugar may tend to produce fat, and to sustain the respiratory processes, we cannot consider either of them calculated to build up and support the human frame.

JOHN TOWERS.

FLAX SCUTCHING.—M‘BRIDE'S MACHINE.

Sir,—From the great interest that has been awakened of late, regarding the supply of flax and other fibres for manufactures, by the narrow escape we had in the last war, and particularly from the severe trial the flaxspinners experienced, whereby many of long standing failed, such attention was aroused relative to the production of flax at home, and of it and other fibres in our colonies, as should not be allowed to cool down, now that the danger appears to be past.

For many years I have taken a great interest in, and have paid much attention to, the above subject, and therefore I have been led to watch closely any improvements taking place in machinery for cleaning or scutching flax; and, having had some experience with M‘Bride's first patent machine for such a purpose, it led me to see that, if a few defects therein could be got over, it would be, as nearly as possible, a perfect machine.

While on a journey to the North lately, business led me to cross over to Belfast; and having heard, some short time previously, that a *second* patent had been secured for M‘Bride's machine, whilst in Belfast I called upon the Messrs. M'Adam, the spirited engineers there, who had brought out the improved machine, and those gentlemen afforded me every facility for inspecting and making full trial of the capabilities of the machine; so that, having made a careful trial of it during two days, I felt convinced that it was one of the most important movements yet made in the flax trade: and it is now my deliberate opinion that, by means of this machine, it will be possible to prepare and dress flax fit for the English market in any quarter of the globe where the plant can be grown, without regard to the unskilfulness of the inhabitants. The vast quantities of flax straw now thrown away in India could, by the above invention, be made productive of a profit that would induce cultivators generally to secure the same benefit; and if the vast capabilities of that magnificent but much-neglected part of our possessions were developed, even as regards flax, thousands of tons might annually be produced, that would materially augment the wealth and comfort of the producers and the manufacturers.

This improved scutching machine is less expensive, more simple, more easily managed, and occupies less space and power than did the first machine, although doing fully as much work; it is perfectly self-acting, merely requiring the flax straw to be put in on one side, and the flax, finished, is taken from the other side. From the moment the straw enters the machine no further attention is necessary, and no skilled workmen are required, as any boy or girl of fourteen or fifteen years of age can be taught to feed it in two or three hours—the machine does all, and delivers the flax well scutched.

All clasps or holders for fastening the straw are dispensed with, the attendants are not liable to accidents, and the important object of security from the annoyance of dust is attained, which is so injurious to the health of the workers; for, by simply elevating the machine a few feet, the whole of the tow and the scutching dust pass away beneath; so that, from witnessing this trial, I feel convinced, by the clean fibre yielded, and the small quantities of tow and waste left, flax can be scutched with quite as small amount of loss as by the most careful handling of skilled scutchers, which shows the great advantage of using M‘Bride's machine, whereby unskilled labour, at 10d. or 1s. per day, does twice the work of skilled hands at 3s. to 3s. 6d. per day, and the machine can be easily set, so as to dress either green or unretted straw, as well as either cold or hot-water steeped.

The space it occupies is about 17 feet by 10 feet; the holding of the flax is effected by means of a horizontal wheel of about 3 feet diameter, having on its circumference two grooves, in which grooves, by endless ropes, kept tight by a counter-weight, the flax straw is held firmly between the grooves and ropes, to be taken slowly round to the breakers, or scutching blades; *here* the great improvement occurs. These blades are fixed in a peculiar manner on two horizontal shafts, parallel to each other, but on different levels; each shaft carries arms, placed opposite to each other, so contrived as to pass each other without coming in contact; to these arms the scutching blades are fixed, passing each other in intersecting circles, the intersection taking place immediately *below* the circumference of the holding-wheel. The blades strike the flax rapidly, but gently on either side alternately, whilst it is passed slowly under their action in the grooves of the holding-wheel; and, being thus cleaned at one end, it is grasped at the proper moment by the holding apparatus of the second pair of the scutchers, being counterparts of the first, but so set as that the other end of the straw is effectually cleaned, and thus the finished fibre passes out ready for the manufacturer.

Messrs. M'Adam and M‘Bride, in their own statement of performance of the machine, modestly put down 500lbs. of fibre cleaned in a day of ten hours; but the result of the two days' trial I witnessed gave us, on the first day, 800lbs. of clean fibre, or an average from each cwt. of flax straw of 30lbs. clean flax; but on the following day, with increased speed, 900lbs. were produced in ten hours, on an average of 29lbs. flax from each cwt. of straw; yet by the present expensive mode of hand-scutching from 20lbs. to 22lbs. is reckoned a fair yield from each cwt. of the straw, showing most strikingly the great advantages from M‘Bride's new machine. Thinking that some information relative to the profitable nature of flax culture may be appropriately inserted here, and may also be interesting to some readers, I have copied the following report, made by Mr. S. Druce, of Ensham, near Oxford, to the Royal Agricultural Society, dated 26th Feb., 1851, and also the comparative expenses of scutching by machinery, and by skilled labour:—

Mr. Druce's Report, Dated Feb., 1851.

Dr.	£	s.	d.
Rent, at 48s. per acre, 5a. 2r. 3p.	13	14	9
Taxes, at per acre, 6s.	1	14	4
Flax seed, 13½ bushels, at 9s.	6	1	6
One ploughing, at 10s. per acre	2	17	3
Sowing and harrowing, at 1s. 6d.	0	8	0
Weeding ditto, at 2s.	0	11	5
Pulling flax, at 14s.	4	0	1
Carting and stacking, at 4s.	1	2	10
Thrashing	5	7	1
Winnowing	0	12	6
To balance (profit)	47	16	4
	£84	6	1

Cr.	£	s.	d.
Sale of produce, flax seed 116¼ bush. at 8s.	46	10	0
Ditto straw, 12t. 2c. 2q. at £3	36	7	6
Chaff, at 5s. per acre	1	8	7
	£84	6	1

The soil on which the flax was grown consisted of a deep loam.

To estimate the probable result of scutching by M'Bride's machine, it will only be requisite to take out the quantity and value of straw from Mr. Druce's report above, and allow two tons of clean fibre therefrom, at a cost of £9 per ton of flax for the processes of steeping and scutching, which will show a net profit of £45 12s. 6d., valuing the fine fibre at only £45 per ton.

The following are the comparative results of scutching flax by patent machine and hand-labour:—

Observe:—The rolling or breaking the straw being the same either way, it is not taken into account; the prices attached to the estimate for hand labour are stated to be the average paid throughout England.

	£	s.	d.
Hand labour: scutching 40 stone, 7½d., or 640lbs. clean fibre	£1	5	0

M'Bride's Machine (New Patent).

	£	s.	d.
Yield in one day of ten working hours: 40 stone or 640lbs., 2 feeders, at 1s. and 10d.	£0	1	10
1 straightening ends	0	1	0
1 attendant	0	0	10
2 dressers at 3s. 6d.	0	7	0
Wear and tear	0	1	0
	0	11	8
Balance in favour of machine	0	13	4
	£1	5	0

In the important question of flax scutching there is the great cause of humanity involved. It is not so much the money-saving on the cost of working by the new patent scutching machine that should be regarded, but the difficulty also of securing skilled hand-scutchers, and of keeping them to their work when once trained. Let any reflecting person go for a short time into an Irish scutching mill, and see if he would not be glad to retreat out of the fog of fine dust in which he would be enveloped. Much is said about the drunkenness of the hand scutchers, and the impossibility of keeping them regularly to their work; but, let it be considered that these poor fellows stand close to the breakers, flying round ike the sails of a windmill several hundred times in a minute, and casting off in sticks and dust eighty pounds weight at least to every 32lbs. of fibre cleaned; and, further, it is not merely one man in a room, but often twenty or thirty, and in some places many more, confined to one place with continual dust to aggravate thirst, and, consequently, the desire to quench it. My own wonder is that the men can be got to work at all; and for this reason a person who might start a hand-scutching mill will not find it answer. One might as well try to persuade some of our sporting friends on a *Derby Day*, driving along a thronged and dusty road, that they do not need anything to wash the dust down, as to persuade these poor scutchers from drinking. In most cases they lose their appetites, then their energy, and thus substitute the stimulus of drink to enable them to toil on in their unhealthy employment. Therefore I say that Mr. M'Bride, for his great ingenuity in contriving, and the Messrs. M'Adam, for their skill in bringing the new scutching machine to perfection, deserve the fullest support, and the best thanks of all who have the success of the commercial and manufacturing interests at heart, combined with the improved condition of our operatives. Thirty years' experience amongst working-men convinces me that nothing is lost on the part of any employer by studying the comfort of his people. Edwin Ward Trent.

Park Hemp Works, Old Ford, Sept. 29th, 1856.

THE PROGRESS OF AGRICULTURE.

"Well, and how are we getting on now?" asks the Doctor in a cheerful complacent tone, that of itself goes far to answer his own enquiry. "Ah, I see—pulse good and regular—mind easy—spirits excellent. Nothing could be better. We are progressing very favourably indeed. Our improvement of late is very encouraging."

The Agricultural M.D., the professional friend of the farmer, has just been greeting his patient in this hearty self-satisfied manner. He seems to be quite out of danger by this time. There is no necessity even for that change of air and place without which, some of the learned declared not very long ago he would never get on at all. He will do very well where he is, my dear madam. He is by no means the hypochondriac we were led to believe, but as sanguine and energetic as any man need be. Only see how stout and strong he is, and at what a pace he can go already without his crutches. With fair play, and a little proper attention from his advisers, and no man in the world ca do better.

The real secret of all this is—a common one enough in such cases—that the patient has been doing a great deal for himself. Despite the little hopes they gave of him at one time, he himself never despaired. Notwithstanding the cold water cure that some so liberally applied, his constitution was good enough to withstand it. He has been taking plenty of exercise, rambling all over his own country, and carefully studying every available means of improving his condition. The Faculty have of late, indeed, left him very much to himself; some considering that he did not require their aid any longer, and others disgusted at his not having fulfilled their unfavourable prognostications. "By rights," said the Bath guide, when he heard to his surprise that some one he had given over was mending, "by all rule and precedent, he ought to have died during the night; but if he still persists in living on, of course I can have nothing more to do with him."

The British farmer did not die away during the night, in the temporary gloom that overshadowed him; but, to the great surprise of certain authorities, persisted in living on. Like Hood's hero, he felt that if he wasn't a *flat* he might get *round;* and that, knowing his own business best, it might still be a business worth attending to. In answer to the flattering exordiums of gentlemen who knew a vast deal more of his case than he possibly could himself, and who complimented and encouraged him in this wise—that he was behind the spirit of the age, that growing corn was not a pursuit any longer to be looked to in England, that he had better emigrate, commit suicide, or do something equally necessary to get rid of himself—in answer to all this, the English farmer stood where he was, but he didn't stand still. In their petty jealousy they would, like Joseph's brethren, have banished and ruined him. A few unforeseen events, however, utterly falsify all they have done and said; and when they want corn, to him it is that they must come.

It may be dangerous, in the opinion of some, to let the world know quite all we are doing. But the PROGRESS OF AGRICULTURE can no longer be denied. We are advancing all ways, and no class with more certainty or satisfaction. When the chief speakers at the recent gatherings had given vent to all they had carefully kept "this side upwards," against statistics, they yet proceeded to furnish us with some general information on the present condition of agriculture and the agriculturist. We have marshalled this again, point after point, into an adjacent column. The progress of agriculture, on the strength of such evidence—and there is no denying it—reads full of something more than mere promise. We are, the rather, fast realizing the facts of our improvement, and at the same time gradually disabusing the minds of some of our own neighbours as to the amount of credit actually due to us. After all, summon whom you will against him, there is no farmer like the Englishman. Test him in this year 1856: on what you will—intelligence, enterprise, means, or actual accomplishment—and who is there to rank with "the Britisher?" "No country in the world," says lord Henley, "can conquer England in the production of corn," and none, so far, we may add, in the production of stock. It was amusing enough this summer to observe our own agricultural society so excited as to what was to be seen and done in France—to find them at Chelmsford encouraging the famous breeds of that country, and with the utmost liberality giving premiums in value about twice that of the animals they were awarded to. As a something reciprocal all this was perhaps justifiable enough, but there could be no useful moral about it. What the English agriculturist has to learn will be chiefly of himself and his countrymen. With the old Greek proverb, it must be "Know thyself."

Of the practical matter in the accompanying extracts two further experiments of this last season have been chiefly and very properly spoken to. These are, the reaping machine and the steam-plough—both strikingly emblematic of the progress of agriculture. Of the former of these it is rather remarkable that everybody speaks favourably, save and except only the Boxted award. There has not been a letter published in the papers—and there have been very many—but declares the "practical utility" of this invention during the late harvest. There has not been a vivâ voce opinion volunteered but is precisely to the same purport. We have searched carefully to find anything against the established use of the reaping-machine, and we see nothing but the curious edict arrived at over the adjourned trial in Essex. "The reaper," as was well said by Mr. Brandreth Gibbs at Woburn, "whose lot it was to toil beneath the burning sun for a period far beyond the strength of man, now sees the golden harvest of the field cut with regularity, and his only work is to bind the corn in sheaves, and to place it in stacks." Mr. Crump, going more into detail, states "he purchased a machine of Mr. Dray, which he sent on that night, so that he had it at work by ten o'clock the next morning. So satisfied was he of its general usefulness, that he telegraphed for another, and thereby released himself of the difficulties in which he had been placed." Mr. Blakemore "particularly commends to the farmers of Herefordshire the use of the reaping machine. He had reaped a large breadth of his wheat this year with the American." And so on. Add to this the testimony of Mr. Hammond, in the *Journal*, and we think it will require a vast deal of explanation to put back the reaping machine.

Mr. Crump also gives his experience of the steam-plough; and many others, it will be found, speak very sanguinely to its soon ranking amongst the implements of agriculture. Rather oddly, Sir Joseph Paxton, the architect of the House of Progress, is the only speaker who appears seriously to doubt the ultimate use of this invention. In another matter the worthy baronet is more in advance. In connection with the proceedings of the Bakewell Farmers' Club he has established the system of giving premiums for the best cultivated farms, the effect of which is already very encouraging. Mr. Chowler says as much for the adoption of the same incentive to improvement on the Duke of Rutland's estates; while, notwithstanding a very bad start, there is no doubt the same thing is working well in Northumberland. One gentleman insists on the necessity for a prize landlord. Perhaps, of the two, a prize tenant goes more directly to the point; and we certainly hope to see the plan of giving premiums for the best cultivated farms gradually extending in the operations of our Agricultural Societies.

Let Mr. D'Israeli say what these Societies have already done and are doing. Let him dwell with the triumph he may on the impudence and impotence with which they have been assailed. With all these flaws and failings, it is something to see them still so flourishing, for they have done much for agriculture—in other words, the agriculturist has done much for himself.

THE PROGRESS OF AGRICULTURE.

—AS SPOKEN TO AT THE RECENT AGRICULTURAL MEETINGS—

Looking back to the period when the society was established, he must say that there was not a farmer, there was no man whom he had the honour of addressing, or in the county, that had not observed great and extraordinary progress in agriculture. Meetings such as that occurred daily and weekly now in every part of the kingdom; and the benefits that were derived from them, not only by the farmers, but by every class at all connected with the land, were so great that he trusted and hoped that England would never see the day when agricultural societies would cease to exist. No doubt the arts and sciences had done great good service to the farmers; mechanism had done him much good; but it must be to the perseverance and untiring energy and enterprize of the farmer himself that he must now look for those abundant fruits of his labours which he had a right to possess, and for the position which he had a right to occupy. He had seen the application of this indomitable enterprize and its advantages down in the North, where the Scotch farmer has raised good crops under the most trying and extraordinary circumstances. He had seen how they had literally besieged with the plough the very summit of the highest "cloud-capped mountains of Scotland"—he had witnessed them gathering crops from where but a short time ago nothing but heather and the thistle grew—he had seen them taking a remunerative crop from land that hitherto was barren and almost useless. Now, what was that to be attributed to, but the energy and zeal of the farmers, of the hardy sons of a country who know no difficulties, and whose zeal allows nothing to stand between them and the very proper object they have in view—remuneration to themselves. Nearer home a similar extraordinary progress had been made. Agricultural machines were daily pressing themselves into notice; and the farmers found that they could now accomplish by the aid of machinery what they had never been enabled to accomplish before.—The Duke of BUCKINGHAM, at Buckingham.

No country in the world could conquer England in the production of corn. The American could not do it; for, though he possessed vast tracts of land of virgin soil, a warmer climate than ours, means of communication equal to ours, and, as the American Minister said yesterday at Hitchen, millions of his countrymen were engaged in the production of corn amid measureless plains of exhaustless fertility in the vast valley of the Mississipi, he yet had his difficulties to contend with. There were forests to clear, labourers to be paid at high wages, six or eight per cent. to be paid for money that might be borrowed. Was he, then, the man to overcome the English farmer? No. Then there was Australia, with her vast tracts of land, and the advantage of the British Government to assist in its cultivation. But in Australia there was the temptation—the feverish excitement—of gold-digging influencing the farmer with a desire to enrich himself suddenly, and thus neglecting the cultivation of his fields. There was nothing, therefore, to be feared from the Australian farmer. In the vast plains of Russia and Poland it might be possible to produce corn at a lower rate than in England; but, if that were found to be the case, did they suppose the landlords of those provinces would not presently require higher rent for their land, and thus render the production of corn there as dear as in England? Undoubtedly. In short, he defied any man to find a place in which the agriculturist could beat the British farmer in the production of corn. But even if it were found that the English farmer were beaten in corn production, he had still another staff on which to lean. The British farmer could still breed and feed cattle better than any other nation in the world—proved by the falling off of the importation of foreign cattle, about which so much apprehension was at one time entertained. And why, he would ask, should they not cease to import corn as they had ceased to import cattle, and become the monopolists of their own markets, by producing the best articles in the greatest quantity? There was another matter. Five or six years ago, when it was questioned whether the English farmer would be able to continue to produce corn, landlords were called upon to erect buildings for the reception and feeding of cattle. He would remind farmers that landlords thus called upon would naturally expect to be sharers in the profits, and that it would be to their mutual interest for occupiers who required buildings to tender to the landlords a proper per-centage on the required outlay.—Lord HENLEY, at Northampton.

Every time they met, they not only rewarded the skill of the practical agriculturist, but they made every meeting, so to say, a milestone to mark their progress, as each year some new invention was exhibited which furnished them with reflection for the year which followed. It was true that the farmers might not know the progress which they themselves had made, for that progress was not to be measured by these annual exhibitions, inasmuch as they were fluctuating in their character; but it was to be determined in periods of five or six years each, not from the working of one society alone, but by that of the various agricultural societies throughout the kingdom. It was the business of men of statistical details to inform them of the national progress within the time of the present generation, the number of new inventions which have been introduced, and the improvement in the breed of stock which had taken place within that period. He found that within the last three years, independently of the sum expended on ordinary manures, the farmers of this country had laid out £5,000,000 in the importation of guano, and that within the same period of three years a million of fresh acres had been brought into cultivation. Those benefits, however, were not confined to the agriculturists alone, as all society and all enterprise participated in the success he had referred to. The merchant at Liverpool and the manufacturer at Manchester had as direct an interest in the success of these associations, and in the exhibition of those results, as the farmers themselves. It was quite true what Lord Lonsdale, the other day, said in West Cumberland, that the two great problems which they, as agriculturists, had to solve, was, first, the degree to which mechanical inventions might be applied in cheapening human labour; and, secondly, the degree to which the sewage of towns might be used to cheapen the cost of those manures with which they were already familiar. The farmer was not a chemical professor, nor was he a mechanical inventor; his business was, without prejudice on the one hand, or rashness on the other, to watch carefully the result of chemical philosophy and of mechanical invention, and, on the result of that watching, to apply them or reject them as they suited or did not suit his purposes. He was not one of those pompous amateurs who took upon themselves to lecture farmers on their own business. He had often seen men who would sooner cut their tongues out than presume to dictate to a Liverpool merchant how he should manage his counting-house, or to a Sheffield cutler how he should sharpen his blades, but who no sooner find themselves at an agricultural meeting than they enlarged on everything connected with farming, from the material of their manures to the shape of their ploughs. As practical men, they were not, he thought, much inclined to respect such advice.—Sir E. BULWER LYTTON, at Hitchin.

The operations of this and other societies may not be extensive, but the object at which they aim is the beneficial condition of man. You cannot throw your eye over the awards of this day without feeling that they tend to elevate man. It is idle, gentlemen, to suppose that the ceremonies of to-day will vanish as the sun. No; the sturdy ploughman of to-morrow, or the boy who "whistles at the plough," if he should meet the successful farmer who has cultivated the best five acres of swedes, will feel a spirit of fraternity which all the laws invented by senators can never achieve. I would uphold these societies on the ground that man is never so weak as when he is isolated. It is on this that I rest the vindication of these societies; and if there be one man on whom the truth should be impressed more than another, it is on the tiller of the soil. He fulfils the noblest of duties, but he fulfils it alone. And, gentlemen, we must always remember that emulation is the parent of enlightenment. It is emulation which leads to improvement. What has kept you alive in the old days of your depression? Why it is the market-day which has kept the farmers alive. They are driven into the town—they meet their fellow-men—they exchange ideas. They hear that such a man has made some improvement whereby he has attained some advantage, and they are induced to enter on an honourable rivalry. But what is the tendency of these associations? To multiply market-days, to take the agriculturist more out of his solitude to mingle more with his fellow-men, and to teach him that is is only by union he can obtain that fair-play to which he is entitled. There is not a class of agriculturists whose position is not advantaged by these institutions. From the inhabitant of the cottage, who possibly at this very moment is communicating to his little circle the feats of the day, to the proud occupier of the soils, meditating the results of future enterprise, an impulse is given to all classes.—Mr. DISRAELI, at Chesham.

The returns which were monthly made to the Board of Trade showed that the commerce and manufactures of England were never in a state of greater vigour than of late, and no man could shut his eyes to the fact that the prosperity of commerce and manufactures, and also that of the landed interest, were attributable in no small degree to the immense influx of the precious metals which had marked the last few years, and which he believed would beneficially operate in future. Nor was that all. Those few disastrous years had taught them that the practice of agriculture was governed by the same laws as any other occupation; that the time had gone by when the man who had neither money enough nor wit enough for any other profession might take a farm and say he would try and live upon it. If a man was to succeed as a farmer, he must approach his business as he would any other; he must have adequate capital, brains, training, and skill. The same conditions applied to the man who undertook to farm a piece of land as to a man who undertook to be a banker, or merchant, or manufacturer. They had learned that if they meant to live upon the land, they must show confidence in the land, and place their capital upon it, and then they would certainly succeed. He asked them to consider the millions of money which had been spent in guano alone during the last few years, the hundreds of thousands of acres which the spirit of English agriculturists had recently brought into cultivation, and, lastly, the millions of money—he believed he might safely use the word millions—which had been spent under the wise, judicious, and liberal conduct of the Government of this country in deep draining the land. He spoke with diffidence upon this particular question. Altoough not a very young man, he was a much younger farmer than many of the gentlemen present, but he believed that deep draining was one of the most important branches of agriculture, and that nothing paid better than the investment of capital in deep draining. Their best policy was to put their capital in the land, and the land would repay it.—Sir John Pakington, at Worcester.

In addition to showing and speaking of stock, such meetings as the present afforded opportunities of communicating ideas as to improved modes of husbandry, and as to the various mechanical improvements which so largely tended to develop those improved modes. He found, from Mr. E. Denison's report, that the effect of the Exhibition of 1851, upon the sale, throughout England, of agricultural implements, had been most remarkable. Taking alone the firm of Messrs. Clayton and Shuttleworth, of Lincoln, he found that during 1851 they sold 140 portable steam-engines; in 1852, 243; 1853, 284; 1854, 363; 1855, 491; so that, during the four last-named years, the firm had sold 1,390 engines, equal to 8,701 horses' power. Deducting ten per cent. for the proportion exported, the operations of this one firm had applied to our soil 7,831 horses' power during four years. He found that each of the several agricultural machine makers reported that since 1851 the sale of such machinery had steadily increased. They said also, that whereas in 1851 the average of the engines sold was five horses' power, the average of those now sold was seven horses' power; and the export of machinery to the continent was constantly increasing. In Norfolk, Lincolnshire, and elsewhere, where these portable engines were much used, corn was stacked in the field—not carried to the barn. The engine was brought to the side of the stack, as was also the thrashing machine; the corn was thrashed upon the spot, put into sacks, and was at once available for market. Thus were effected a great triumph for machinery, and a great saving of time, labour, and money for the farmer. The machine, of which in that neighbourhood they had probably had the most practical experience, was the tile-pipe draining machine; and none had produced a greater revolution. A very few years had elapsed since any of them first saw that machine; they all knew the extreme prejudice with which its introduction was received in this country, and they were witnesses of the effects which its use had produced in that neighbourhood.—Sir J. Kay Shuttleworth, at Padiham.

He was bred and born a farmer, and for more than half a century he had been engaged in farming pursuits. He would like to make a few remarks relative to productive farming. They should all aim at it. Three or four things were necessary to productive farming—first, good manure; second, good conveniences; third, good cultivation. Good manure was very essential. He would not say a word in depreciation of artificial manure, but he thought it too much like steam, going off too rapidly; the land wanted something more permanent, and, in his opinion, there was nothing so useful as good yard manure. Farmers wanted more of it in quantity and better in quality. It was possible to produce more manure, but the question was whether it would be good. Good manure might be produced by horses and pigs, but he believed a sufficient quantity could not be produced without stall feeding. Whether it was best to feed beasts for consumption in the winter, or to make them up for going off in early summer, prudence would dictate. The question arose, how was this to be done on large arable farms, with but little pasture land? That was a question which landlords should consider most, for it depended on them in a great measure to answer it. It struck him that it would be wise to give a fair proportion of pasture land to arable, and good manure would then be produced. Secondly, as to good conveniences; they were absolutely necessary. He remembered years ago that open fields were very common. The farmer had his house and yard, and labourers their cottages huddled together in the village, and there was a great waste of labour in the distance that labourers and horses were obliged to go to, and return from their work. Now it was highly necessary to have not only convenient farm-houses and cottages, but cattle sheds for productive farming. It was not only necessary to have these conveniences, but it was of vast importance to add to them good cultivation. He had heard that upon a cannon at Dover was this inscription—

> "Load me well, and keep me clean,
> And I'll carry a ball to Calais green."

Now, in order to productive farming, the land must be well cleaned and well loaded with manure, and then, by the blessing of Providence, it would bring a quick and profitable return.—Mr. Cave, at Wellingborough.

Assembled as they were, on the very spot where the first agricultural meeting in England may be said to have been held, they might for a few moments trace the alteration which have taken place in the prospects of agriculture since the Woburn Sheep-shearing was first established. During that time what changes had taken place in the policy of the Government and this country! what great discoveries had taken place in science, and what improvements in agriculture! The sower no longer casts his seed broadcast, for the drill drops the precious seed with regularity and care; and the horsehoe follows in its wake. The thrasher need no longer lift the tardy flail with sad monotony, but with the aid of steam the corn is thrashed and the farmer receives it ready for the market as soon as it is carried from the field. The reaper (whose lot it was to toil beneath the burning sun for a period far beyond the strength of man) now sees the golden harvest of the field cut with regularity, and his only work is to bind the corn in sheaves and to place it in shocks. The drainer carries away with ease the drainage from his land, and renders the land that was unproductive and neglected now fit for our best use. The navigator leaves our shores laden with most precious substance, and instead of returning empty-handed brings us rich guano, a dust simple in appearance, but, figuratively speaking, valuable even as dust of gold. But there was one other thing to which he must allude. Some might smile when he spoke of it, but many of them had that day witnessed that great desideratum—ploughing by steam. He believed they had that day seen that which would establish steam ploughing as a fact. He believed that what the telegraph and the railway have been to every-day life, such would be the application of steam to agriculture. And he hoped that ere long the Royal Agricultural Society of England would be able to recommend a steam plough to every agriculturist in the kingdom.—Mr. Brandreth Gibbs, at Woburn.

They were constantly hearing of steam thrashing machines and steam ploughing machines doing this thing and the other, but he had no faith in steam ploughing machines. He had studied much and watched with great interest all mechanical power applied to the improvement of the land, and he certainly had formed a very strong opinion that a steam machine for the purpose of ploughing the land was a thing which would never be profitable for the farmer to adopt. He should be exceedingly glad to be deceived, but at present the conviction of his mind was very firmly impressed indeed. He knew that reaping machines had done great things, but they would have to make a great struggle before they could drive out the sickle and the scythe, and the plough, and all other hand machinery from the land. The reaping machine might answer in some districts tolerably well, but in other districts it would not answer the purpose. In their own hilly district it would be impracticable, and it required some judgment in the selection of machines to bring upon the land. He urged them to procure high-bred stock of cattle to breed from, and with their own energies and well regulated farms they would be able to meet any times that might happen more adverse to them than the present.—Sir J. PAXTON, M.P., at Bakewell.

He certainly felt proud that his brother and himself should occupy the position which they did, having been so eminently successful, not only in winning the prizes given by Sir Joseph Paxton for the best regulated farms, but in having obtained many of the prizes for the best stock exhibited. He felt proud of the position they occupied, as they had come into competition with a good number of the best farmers of the country. He was at a loss to find language to express his gratitude to Sir Joseph Paxton for having instituted such valuable prizes for the best-regulated farms. A number of years ago the Duke of Devonshire determined to kill the game on the Chatsworth estates; and if he felt gratitude of heart for the noble Duke it was on that occasion, as the destruction of game was essential to agricultural improvement. They might depend upon it that where there was an excess of game there could be no agricultural improvement. They commenced their agricultural improvement by increasing their knowledge of agriculture. They began to read the best agricultural periodicals of the day, and to avail themselves more freely of the excellent library they had in connection with the club, and to frequent the best-cultivated farms. They were aware that in order to make agricultural improvement successful there must be a reciprocal feeling and action between landlord and tenant. Effective drainage was at the foundation of all good farming, and in this respect they had had the assistance of their noble landlord, as whatever part of their farm wanted draining had been drained, and comfortable buildings had been provided for their cattle, for without them they could not keep a large quantity of stock. In order that their farms might be highly cultivated and properly manured, they must have a large quantity of stock, home manure being the best. One of the improvements they had effected was apportioning the size of their fields on the farm. When they first occupied it they had small fields and large fields, there being a vast disproportion in the size of them. They had grubbed up the fences and made all of them one size, something like twelve acres each. The next improvement was a proper rotation of cropping, and their object had been to follow the four-course system. It was not their custom to grow two white crops in succession. What was it that made gentlemen afraid to have their land ploughed? It was because some farmers had been in the habit of taking two or three white crops in succession, and thus impoverishing the land. If they wished for a well-cultivated farm with the rotation cropping adhered to, he could not conceive of anything better than an alternation of white and green crops, as nothing was calculated to produce so large a crop. They had been most liberal in the application of manures. They had grown as large crops as they dared without growing too strong. In reference to the quality of the stock they had on the farm they had had ample opportunities of judging year after year, and the result of this was that their farm was in the highest state of cultivation. Parsimonious farming never did and never would succeed.—Mr. FURNISS, at Bakewell.

I want to plough by steam. That it is possible to do so I have not the slightest doubt. And I believe that before long we shall see steam ploughs generally at work. I have seen with my own eyes a draining plough used in the forest of Hainault, in Essex, within the last two months. The soil was a beautiful clay; the coulter went four feet deep, and at the bottom of the trench it laid the pipe tiles much better than could have been done by any man whatever. I have not only seen the coulters go a depth of 48 inches and lay the pipes, but I have seen them taken up again to show that there was no mystery in the matter. My argument, therefore, is that as it is possible, as undoubtedly it is, to put in pipes by steam power four feet deep, it must be equally possible to plough a depth of eight or nine inches by steam power. And I believe that before long it will be generally done. That is the conviction which I venture to express to you; and in order to be ready when the time shall come in which steam ploughs shall go about the country as steam thrashing machines do now, I would recommend those farmers who have their farms hemmed in by a lot of hedge rows, to make their fields larger—say 50 to 100 acres, so as to give the engine full scope for work. By this means a man would come with an engine and steam plough, and plough all your land at so much per acre in a few days, so that you would get all your stubble ploughed in at a low price and in a short time.—MR. ALCOCK, M.P., in Surrey.

Why should we not, having the framework and outline of an association of an extensive character, work out an arrangement for the employment on our farms of the best and most improved machinery? Why should we not have the steam thrashing machine, the reaping machine, the steam horse, and the steam plough? In Devonshire a company has been formed for the purpose of purchasing agricultural machinery for their own use, and they have purchased a steam thrashing machine by which they thrash their grain in a very short period at a cost of eightpence a quarter. I am led to these considerations from a desire to see the prosperity of the farmer, although they are made by one who is anything but a practical man. I have no doubt that the time is not far distant when the steam horse will be seen going over our lands, doing our work more effectually, and doing it at the rate of an acre an hour, equal to the work of 16 horses, and not at the cost of 20s. an acre, which I recollect I had to pay my friend Mr. Hall, but at the rate of 3s. or 4s. an acre. I believe we shall see these agencies brought to bear on the land before long. We live in days of telegraphs and steam engines; I have recently passed a month in Scotland, and could not help being struck by the great increase in the number of steam chimneys which I saw all over the country. It was quite refreshing to see those chimneys where farming was carried on in its highest character. These are points worthy of meditation, and as I have said often, we must study and try to follow the example of the manufacturer, and by the introduction of improved machinery procure a greater produce.—MR. GADESDEN, in Surrey.

He had still continued his little experiment of growing wheat, upon the plan adopted by Mr. Smith; and during the five years it had been going on, he had given the land no manure whatever, either farmyard or artificial. In 1852, the two acres were in four-course shift, all wheat. In 1853, when the half, that is to say, one acre was wheat and the intervals were trenched, the produce was 2½ quarters. In 1854, the other half trenched land produced 5 quarters 5 bushels; sold October, 1854, at 56s. per quarter, or £14 4s. In 1855, one-half red wheat blighted produced 5 quarters 1 bushel; sold on the 21st of September, 1855, at 76s., or £19 6s. 5d. In 1856, one-half sown with Mr. Huntley's red wheat produced 5 quarters 3 bushels; sold September 26th, 1856, for 66s. per quarter. The result was that the total amount received from these two acres for the three years was £51 3s. 8d., £17 1s. 4d. per year, or £8 10s. 8d. per acre. He would not say this could be done upon a large scale; but if they could go on getting £8 10s. 8d. per acre without any manure or other expense, beyond the trenching the fallow part, with one horse to drill it and a donkey to roll it, and the expense of carting, which would be paid by the off-corn, they would do pretty well. So far as that field was concerned he had no land which paid better. For the forking he paid 1s. 11d. per score rod of two feet wide.—LORD RAYLEIGH, at Witham.

Steam ploughing did not come upon him by surprise, as it had engaged his attention for the last two years, and he had thought to make one, and had drawn a picture of the very plough now in use hundreds of times before; but he could not find out how the resistance at each end was to be obtained, but it now appeared very simple. Immediately he saw it at work he was convinced it was the very thing needed, and he lost no time in giving an order, which he hoped to have had executed two months ago, but he was glad to say he had the plough at last. He had now received it something over a fortnight, and he was told that his six-horse power engine would work it very well, but he found his engine was of no kind of use whatever; and next day he obtained an eight-horse engine from Messrs. Ransome's and set the plough to work. He had had the plough 17 days, and he considered, from stoppages and breakages, the working period was about 10 days, and, up to last night, they had ploughed 58 acres; that ploughing was better done than what they had seen executed to-day, for they began to plough fleeter till he got into the field, when he had the plough deepened, and that morning they had ploughed about six acres, having finished the field and taken the plough home. During that period they burnt, as near as he could tell, seven cwt. of coal, which, had the land been half as long again as it really was, would have produced a greater amount of ploughing, in consequence of the loss of steam whilst adjusting the plough at either end. That gave about 16d. per acre for coal, but had the field contained eight instead of five and a-half acres, the cost would not have exceeded 14d. Of course he could form no accurate idea of the repairs, but he estimated the wear and tear at 1s. 6d. per acre, which would give 2s. 10d. per acre. In the ten days' ploughing of 58 acres there was very little wear and tear, and, at the scale of allowance, which he thought liberal, there would be £75 for wear and tear after ploughing 1,000 acres. The ropes, during the ploughing of 58 acres, had sustained no perceptible wear. He proposed sending five men out with a plough, and he thought the expense for labour would be about 2s. per acre additional, and, as he thought they would plough ten acres per day, when all their apparatus was in thorough working order, there would be an income of 4s. per day for each man, which would be no cause of complaint. That would make a total of 4s. 10d. per acre when ploughed. He easily ploughed seven inches deep with four shares, and furrows 330 yards long. He could plough deeper, but not twelve inches deep with the engine he had, which, however, ploughed as deeply as he wanted. The men tried an experiment by placing the engine down, and ploughing thirty acres before they took it up again, and that he thought was too great a strain upon the works, and broke two of the cogs. He did not think fifteen or even twenty or thirty acres were too much when the apparatus was in good order. Mr. Fowler was about to make some very important improvements and additions, which were to be applied to his own plough, and the plough might now be removed from place to place and be brought into work again in four hours, which he thought by no means a long time. He was waiting to see what could be done; but he thought a twelve-horse power engine with Boydell's endless railway which might, with the addition of a couple of horses, be removed from place to place, was what was now required.—Mr. Crump, at Witham.

He had occasion to use a reaping-machine. He purchased one at Chelmsford, which the Royal Agricultural Society refused to allow the maker to deliver, and one was not sent him till the 11th of August, and he lost the best part of the harvest by cutting his corn late. The machine did not work well in consequence of straining one of the principal working parts. He afterwards saw the maker at Mr. Fisher Hobbs's, and he promised to send down another machine to cut down the whole of his corn for nothing, than which the maker could not make a fairer offer. He, however, there saw the machine belonging to Mr. Dray, which he purchased and sent on that night, so that he had it at work by ten o'clock the next morning; and so satisfied was he of its general usefulness, that he telegraphed for another and had it down late the same night, thereby releasing himself from the difficulties in which he had been placed, and in one day they cut down nearly twenty acres of wheat, and another year he proposed employing them this way. They would consume about his staff of eighteen or twenty men and boys, and he should then have the most valuable week in the season to expend upon the important duty of turnip hoeing. The corn would then be in an advanced state of ripeness, and the men would be set to work to cut, bind, and pitch it upon the ground. These two reapers cost him £62, and they were as simple as possible, and one pair of horses would work each of them during the day, whilst the other machine he had would require three pairs.—Mr. Crump, at Witham.

He had Chandler's patent water drill, which was much used in Lincolnshire; with this he had put in his mangold and swedes, and he never had such crops in his life; the cost of that drill was £25, and he had been paid more than four times over for it during the first year. The water was attended with some trouble, but with very little expense, and they could put in from 200 to 1,000 gals. per acre. He used 300 gals. for his mangold and swedes, and the consequence was that instant vegetation of the seed commenced, when the plant fed upon the superphosphate of lime which was used, and he would leave those who had seen the crops to say whether they were good or not. In the whole quantity of fifty acres there was scarcely a misplant.—Mr. Crump, at Witham.

The science of agriculture had made great progress of late years, and, after extensive travelling over the continent of Europe, he was convinced that English agriculture, with a few exceptions in Flanders, was considerably in advance of that of other countries. He alluded to the testimony of Laverne, an eminent French agriculturist, who stated in his work that, after a careful survey of England and France, he found that the produce of this country, though only possessing half the acreage of France, was double that of the latter country.—Mr. Whitmore, at Bridgnorth.

We believe that prizes for the best-cultivated farms are much greater stimulants to good farming than particular prizes for cattle or crops; as in this case the farmer must have his eye upon every corner of his farm and see that the whole management is good before he can hope to obtain a prize; and it must also be a much greater honour to win a prize in a strong competition for the best-managed farm than to win a prize for any particular kind of stock or crops. —Messrs. J. Bunting, H. Campion, and A. Grovan,—the Judges at Bakewell.

Canada owes to agriculture in a great measure the state of prosperity to which she has attained. I may say that to follow the plough in Canada is to follow that which leads to wealth. It has been well remarked that the State from which I come shows unusual signs of prosperity; that prosperity has been of comparatively rapid growth. It will, doubtless, surprise many in this room to find that not more than 35 years ago the country which is now covered by fine farms was covered by the primeval forest. You might perhaps have come on the log hut of a settler, surrounded by a little crop of corn and a small patch of peas; but that was all: and he could boast of no market within twenty miles, and even when, by dint of untiring energy, he had made a road passable, by the time he arrived at the market with his crops he found that the expense of travelling had swallowed up all the profits. A few years pass away, and the scene is changed. The patches of corn have grown into fields; the log house is a stable, and the farmer lives in a comfortable house built of stone or bricks. Wait a little longer and the scene again changes. The iron horse has been in the neighbourhood, and the man who a few years ago began life with perhaps only a few shillings in his pocket, has now a farm worth hundreds, nay, I may say, thousands of pounds. I may, perhaps, be excused for a moment if, with pardonable vanity, I allude to the progress which Upper Canada has made. In 1838 the whole amount of wheat exported was 300,000 bushels; in 1853 the quantity had risen to 5,500,000 bushels; and in a paper which I recently received from Toronto, I find the exports from that port for the present year were 700,000 bushels of wheat, and 100,000 barrels of flour. We have a special department called the bureau of agriculture, with a member of the Government to preside over it; and we have a society like the Royal Agricultural Society of England, which gives away £2,000 a-year in premiums. In every county and township there are sub-societies; and by a special grant of the legislature, as soon as a certain number of people form themselves into a society and raise a certain amount of funds, they are entitled to a proportionate sum from the Government. In this way I will venture to say that in no country has agriculture made greater progress than in Upper Canada.—Mr. Allen (of Toronto), in Surrey.

He had, on former occasions, expressed his opinion that the prospects of the agriculture of the country did not rest on any legislative enactments; and he appealed with great confidence to the experience of subsequent events as having confirmed the justice and soundness of that opinion so formed and expressed. He would now add an opinion which he had at a later period taken the liberty of expressing—that the agriculture of this country did not depend for its prosperity on any temporary influence of war, but that it would continue to thrive during the peace which now happily existed, as it had thriven during the peace which preceded the last war. Agriculture rested on foundations broader and deeper than these—it rested on the skill, on the industry, and on the enterprise of the agriculturists of this country. When he saw before him so distinguished a party of persons mainly belonging to that class; when he thought of the splendid exhibition of stock which he had that day witnessed; and when he thought of the general prosperity which, so far as he understood, distinguished the proceedings of that day, he could not but think, when he looked around him and saw what was the state of the country, and heard no despondency of any class of the agricultural community—for he did not hear either of landlords being compelled to lower their rents for a time, or of tenants driven from their holdings by their incapacity to obtain remunerating prices for their produce—when he saw around him these circumstances, he could not but regard them as certain indications of agricultural prosperity.—Sir G. Cornewall Lewis (Chancellor of the Exchequer), at Hereford.

He particularly commended to the farmers of Herefordshire the use of the reaping machine. He had reaped a large breadth of his wheat this year with the American reaper, which, he explained, could be set to cut the stubble as close as a lawn or leave it long enough to afford cover for the partridges. His reaper cut at the rate of an acre per hour.—Mr. B. Blakemore, M.P., at Hereford.

Another cause of the progress which had of late years been made in all matters pertaining to agricultural pursuits, was the vast improvements which had taken place in the manufacture of all descriptions of agricultural implements; and all these facilities put them in the position that, if they did not improve their condition under so many advantages, it would be perfectly inexcusable on their parts. They had arrived very near to a state of perfection in agricultural implements, with two exceptions, which were those of the reaping machine and the steam plough. From the accounts he had lately read, he believed the reaping machine had now been brought so nearly to a state of perfection that it was within the reach of most of the agricultural gentlemen of the district. The steam plough was certainly a great desideratum to farmers; and if they could by any means promote the improvement of this class of implements, and thereby diminish the great expense attendant upon agricultural business in the use of horses, they would be doing a great service to the neighbourhood, and to the cause of agriculture in general. They were told that no less than 35 patents had been taken out for steam ploughs within the last year. It seemed to him that a great deal of labour and expense must have been wasted in producing these articles, because not one of these steam ploughs came so near up to the mark of practical expendiency as to be recommended by those most skilful in the matter, and who were therefore most competent to judge of the merits of the various implements brought into the field of competition. Still, however, it was interesting to watch these movements, because they were evidence that the spirit of improvement and progress is awake, and induced a hope that though they had to wait for the successful carrying out of this design, they waited with a certainty that some good would result from the great talent which had been lately applied to the construction of agricultural machinery, and that it would in the end prove most beneficial to the interests of the agricultural community.—Mr. Benson, at Bridgnorth.

Scotland, although her soil is inferior, is still in advance of this district. How is this? There was as much skill and intelligence in that room as in Scotland, but the matter was fully explained when he remarked that our farmers have no leases; and how could a man be expected to lay out money on his land without a lease to protect him? Now, in Scotland they had long leases; and the result was that they beat us in the culture of land, and we beat them in stock, and why? Because a lease was of no effect in the raising of stock; while the want of it bore sadly against the proper culture of land.—Mr. De Winton, at Brecon.

They had got improved breeds of cattle upon their farms, and they were consequently enabled to sell at a higher price than they could formerly command. It used to be the custom of the farmers to sell off their best calves, and to keep the inferior ones themselves, because they found that they could get most money for the best animals. Now, however, they had either got richer or wiser than they were—perhaps a little of both. He differed from Mr. Kemp in saying that the farmers ought to stick to the breed of the district; he would say, keep the best females, but get the best male animals; and by a judicious system of crossing, they would be enabled very materially to improve their own stock. It was impossible to improve a particular breed if they stuck to that breed alone; the only way to improve it was by mixing with it a better sort. If the farmers continued at the rate at which they had been advancing during the last four years, before the same period had elapsed they would have a class of animals that they need not be ashamed of showing at any meeting in the kingdom. Mr. Welch, at Fylde.

The prospects of agriculture were everywhere good at present, which of itself spoke in favour of the numerous improvements. But with all that had been done, much still remained. It was calculated that there are about 77,000,000 of acres of land in the British Isles, three-fifths of which, it was calculated, were now under cultivation. Of the remaining two-fifths one must ever continue waste in rock, quarry, heath, or headland; but by the advance of agriculture and the spirit of enterprise, the other could be improved and brought from a state of sterility to yield, if not in abundance, at least sufficiently to reward the cultivator, and materially increase the aggregate produce of the nation. They could easily imagine what would result from bringing 15,000,000 of acres into cultivation; nor was he to be met by the reply that the capital which would be exhausted would prove too great a strain upon the energies of the country. When he saw nearly £300,000,000 invested within the last 40 years in railways, the returns from which was not extremely profitable; and when he considered that the investment of £100,000,000 would be sufficient—as had been proved by calculation—to bring all the sterile land which it was possible to reclaim into cultivation, he thought it would be obvious to them all that the wealth of the country would be so materially increased that an ample return would be made for the capital invested. The observations he had made on this point were based upon official documents to a great extent, and it was therefore no mere visionary scheme of his own.—Mr. Norton, at Wateham.

Such noblemen as the Duke of Rutland deserved the highest praise for the encouragement they afforded to agriculture, and especially for introducing the element of competition in cultivating farms. He possessed some knowledge of the country, and he could fairly say, after walking ten miles in a straight line over the estate of the noble duke, the effect of that competition had been that the farming of the land upon it was an example to the country. In every respect, both with regard to the application of manure, its quantity and quality, and the absence of weeds, it might successfully challenge competition with any other district. And here he would venture to say that, with the present remunerative prices and the increase of produce, the owners of property had a right to expect a visible improvement in the farms. What had been the result in this instance? Why, that the whole district, far beyond the limits of the estate, had been influenced and the cause of agriculture promoted by the exertions of the tenants and the success which had attended their endeavours to increase the quantity of their produce. One thing especially was important to be noticed, namely, that it was by no means necessary to adopt stringent agreements in order to secure good farming, for none of the farmers either in Leicestershire or Lincolnshire, where the best farming had met his view, had any agreement with their landlords.—Mr. Chowler, at Waltham.

One thing had been most unfortunately forgotten—prizes for landlords. He saw no reason why landlords should not be encouraged like other men—why they should not come into competition like other animals—why there should not be a prize landlord! He thought such an animal would *draw* immensely. If the society wished to reward him, let them appoint him president! He believed this course would induce landlords to assist tenant-farmers in introducing the best scientific improvements in the culture of the ground, and would, in the end, benefit the proprietor, the tenant, and the whole community.—Captain Stephenson, at Leominster.

GENERAL ABSTRACT, SHOWING THE QUANTITY OF LIVE STOCK IN EACH COUNTY AND PROVINCE IN 1855 AND 1856; THAT FOR THE LATTER YEAR HAS BEEN COMPILED FROM RETURNS LATELY RECEIVED FROM THE ENUMERATORS.

Provinces and Counties.		Horses, with the purposes for which they are kept.						Cattle.					Sheep.				Pigs.		
		Two years old and upwards.			One year old and under two years.	Under one year.	Total Number of Horses.	Milch Cows.	Other Cattle.			Total Number of Cattle.	One year old and upwards.		Under one year.	Total Number of Sheep.	One year old and upwards.	Under one year.	Total Number of Pigs.
		Agricultural.	Traffic and Manufactures.	Amusement or Recreation.					Two years old and upwards.	One year old and under two years.	Under one year.		Ewes.	Tups and Wethers.					
LEINSTER:																			
Carlow	1855	5251	133	877	776	873	7409	15644	9484	8102	8150	42380	27967	15387	19534	62888	6847	17078	23923
	1850	5290	185	885	768	708	7338	16062	9609	8519	8283	42358	24481	16327	18897	59885	3868	12425	16298
Dublin	1855	8710	5447	3879	1146	1238	18429	15908	13293	7558	8612	42771	19699	13283	8201	42183	4983	13328	18309
	1858	7085	8041	4180	1381	1031	18676	15048	14388	6805	5646	41783	20342	12489	15803	48414	8743	12513	16256
Kildare	1855	8570	368	1028	1801	1761	18521	15190	34249	18710	11331	74480	57787	37917	31910	127614	9539	12354	15993
	1856	9110	1006	1061	2260	1692	15129	16042	36452	13719	9571	75784	50924	40467	37798	129189	3055	9057	12112
Kilkenny	1855	12328	545	684	1802	2175	17514	43404	13611	18270	19821	93106	42178	18889	32459	98527	14993	39010	54008
	1858	12898	487	782	1960	1833	17858	47195	16889	18520	17717	97821	38453	18916	30230	87599	11073	29105	40178
King's	1855	9377	260	496	1857	2041	14031	18478	20718	10627	9314	59337	53418	35321	42446	131185	4815	17657	22472
	1856	9760	180	475	1961	1890	14267	19610	19578	11730	7288	57204	48006	38711	41294	128011	3118	11888	15004
Longford	1856	4645	198	201	1003	1257	7305	20748	8944	8297	10889	48378	14371	6588	9460	29419	3242	12718	15960
	1858	4998	194	187	1084	1189	7642	21176	8258	8312	9672	47417	11567	6260	9208	26035	2595	9012	11607
Louth	1855	8229	388	560	1471	1614	12133	8591	9244	6894	6278	32107	19779	8118	8815	31712	3483	10740	14232
	1856	8431	277	518	1527	1575	12328	10246	8571	6902	5762	31481	20516	2978	16945	40440	2531	9486	12017
Meath	1855	19608	734	1356	3786	3626	23310	19689	74954	24611	18251	135485	83744	48524	43314	170582	7018	15407	22425
	1856	14088	634	1481	4115	3398	23646	20178	80810	25850	13875	140813	78707	46424	63898	189029	5000	12546	17546
Queen's	1855	8848	389	804	1353	1518	12723	24843	18637	12519	10734	66733	41496	26931	29086	98413	6681	21445	28126
	1856	8288	331	576	1577	1472	13244	25062	20026	12404	9460	66952	35448	26948	26212	88608	4394	18922	21316
Westmeath	1855	8839	277	679	2195	2518	14506	20300	27928	17254	14599	80081	61974	35009	50105	147088	5785	14602	20387
	1856	8943	358	690	2436	2299	14726	20582	30852	16090	12342	81236	52717	38064	47620	139401	3623	10979	14602
Wexford	1855	18879	489	716	2812	2670	25010	38789	14875	16558	20237	90209	58790	21327	41123	121240	17051	47104	64155
	1856	19172	694	712	2473	2388	25439	39908	16992	18983	18748	94829	55251	25131	42647	128029	12263	37783	50046
Wicklow	1955	7623	510	628	1245	1299	11303	27891	16966	12568	14738	72158	78321	39927	42331	160579	4264	15781	20025
	1856	7776	447	582	1382	1144	11331	28816	18026	13892	18046	73780	71787	48614	47517	167918	3177	11552	14729
TOTAL OF LEINSTER	1855	113111	9698	11150	20746	22489	177194	269905	262703	155163	149454	837225	559525	296221	360684	1216430	82801	237209	320010
	1858	116787	10835	11601	22882	20619	182724	278820	280046	160626	131766	851258	508179	321309	397870	1227358	58440	183266	241706
Increase or Decrease in LEINSTER		Incr. 3676	Incr. 1137	Incr. 451	Incr. 2136	Decr. 1870	Incr. 5530	Incr. 8915	Incr. 17343	Incr. 5463	Decr. 17688	Incr. 14033	Decr. 51346	Incr. 25088	Incr. 37186	Incr. 10923	Decr. 24361	Decr. 53943	Decr. 78304
MUNSTER:																			
Clare	1855	11303	188	486	1553	2141	15671	68270	26806	22383	26889	135349	75731	27007	50213	152951	15580	29908	45468
	1856	11537	432	693	1703	1941	16213	57372	27658	24077	21959	131076	70704	28626	54210	153570	11910	18901	30811
Cork	1855	38743	1678	2336	5862	6657	55271	107044	38493	42757	54500	302794	183565	42968	110888	337421	49955	92393	141748
	1856	39728	1686	2466	6137	6053	56070	167914	40711	47572	49120	305317	179429	42478	121303	343210	35777	74784	110531
Kerry	1855	9447	398	470	1108	1621	13044	107983	33128	26035	37287	204483	60461	17023	33463	110947	22606	25691	48297
	1858	9829	418	449	959	1474	13129	110166	32459	28235	34225	205085	67234	17851	38886	123951	17698	21202	38900
Limerick	1855	12017	614	862	1780	2013	17286	89768	19627	16093	34222	159710	35935	16500	28449	80914	23518	38215	61733
	1856	12583	667	903	1857	1772	17782	91012	19909	17262	32238	160421	34965	16459	25732	77156	17793	32553	50346
Tipperary	1855	19921	580	1275	3058	3249	28094	86066	37053	28535	35436	187085	117341	54514	88361	260216	31422	61198	92620
	1856	20751	682	1315	3355	2905	29009	86646	39597	32827	31722	190792	102482	56408	83904	242794	19940	49336	69276
Waterford	1855	9311	394	648	1191	1434	12979	42580	10745	11114	15237	79676	28738	6712	18224	53674	20459	33158	53617
	1856	9677	403	624	1389	1266	13361	48023	11304	12674	13261	80262	26426	6844	18732	51502	16082	26760	42842
TOTAL OF MUNSTER	1855	100742	3857	6078	14553	17115	142345	552711	165857	146917	203571	1069056	501801	164724	329598	996123	162920	280563	443483
	1856	104105	4288	6350	15400	15421	145564	556133	171648	162647	182525	1072953	481240	168166	342777	992183	119170	223536	342706
Increase or Decrease in MUNSTER		Incr. 3363	Incr. 431	Incr. 272	Incr. 847	Decr. 1694	Incr. 3219	Incr. 3422	Incr. 5791	Incr. 15730	Decr. 21046	Incr. 3697	Decr. 20561	Incr. 3442	Incr. 13179	Decr. 3940	Decr. 43750	Decr. 57027	Decr. 100777
ULSTER:																			
Antrim	1855	21705	1538	984	2310	2905	29442	68008	22815	24606	29777	144708	28018	7390	18559	53967	8181	37860	46041
	1856	22164	1483	1009	2317	2555	29528	66591	22853	26154	26278	141876	27315	6854	22910	57079	6719	35616	42335
Armagh	1855	11037	374	287	895	795	12888	36530	6221	11379	14696	69226	5314	1209	3752	10275	3142	15305	18447
	1856	11237	356	307	610	969	13479	37828	7954	12635	12776	71193	5089	916	4266	10271	3061	13580	16641
Cavan	1855	7629	388	345	940	1460	10968	54983	14062	14970	25412	109377	11659	3405	8985	24049	7111	26760	33871
	1856	8145	559	309	1163	1455	11031	55461	13996	17081	22930	109168	10857	3381	9384	23622	5590	20434	26024
Donegal	1855	19530	264	337	1353	2775	24259	79133	38210	33234	34530	185107	63039	22285	39406	125680	4904	16915	21819
	1856	20027	321	375	1380	2413	24516	78128	39559	35563	29302	182552	70536	27307	49978	147821	3723	11373	15096
Down	1855	25512	604	761	1675	2855	31407	62415	15190	22316	31249	131170	28589	8380	17353	52332	8809	36535	45344
	1856	26180	674	796	1660	2793	32123	62681	17487	27485	27439	135092	24971	6078	20072	51121	6830	32985	39815
Fermanagh	1855	5548	329	282	481	586	7125	51108	15073	11975	22414	100570	7818	2983	6027	16828	2721	16406	19127
	1856	5629	231	248	448	592	7146	51732	14591	12889	21092	100304	7856	2907	6762	17525	1909	12114	14022
Londonderry	1855	16428	384	443	1324	1752	20331	46081	16729	18914	20461	102185	15236	4294	10358	29888	5196	17632	22828
	1856	16933	546	448	1378	1949	21254	46369	16171	20758	18258	101556	14651	5054	12424	32129	4249	19430	23679
Monaghan	1855	8970	281	338	530	815	10934	38804	7992	11581	17285	75662	7131	1463	4440	13033	3185	15842	19027
	1856	9379	204	279	591	847	11300	39272	7913	13142	15349	75676	6879	925	6147	13951	2686	11647	14333
Tyrone	1855	20316	432	386	816	1592	23539	84717	23591	27176	33830	169314	23250	5383	17178	45761	4927	27250	32177
	1855	21074	352	357	803	1542	24131	84418	23855	28556	30086	166915	23736	5075	19675	48486	4027	17717	21744
TOTAL OF ULSTER	1858	136775	4594	4173	9821	15541	170904	521729	159783	176153	229654	1087319	189014	56742	126067	371823	48176	210505	258681
	1856	140766	4726	4128	10373	15115	175110	522480	164079	194263	203510	1084332	191890	58497	151618	402005	38794	174895	213689
Increase or decrease in ULSTER		Incr. 3993	Incr. 132	Decr. 45	Incr. 552	Decr. 426	Incr. 4206	Incr. 751	Incr. 4296	Incr. 18110	Decr. 26144	Decr. 2987	Incr. 2876	Incr. 1755	Incr. 25561	Incr. 30182	Decr. 9382	Decr. 35610	Decr. 44992
CONNAUGHT:																			
Galway	1855	16882	722	1127	3836	4291	26858	42431	53579	23493	19158	138661	248987	143786	137110	529883	15822	31958	47780
	1856	18023	645	1041	3990	4514	28214	43540	51605	28468	17607	141220	244297	174050	149576	567923	12061	22639	34700
Leitrim	1855	2197	365	211	396	688	3759	45505	13657	12743	19066	91061	9549	3052	7977	20578	4735	16055	20790
	1856	2264	321	214	487	552	3838	45190	14285	13166	17290	89950	10184	2419	8141	20744	3613	11091	14704
Mayo	1855	11789	485	427	1960	2870	17531	55643	49028	25135	23777	153583	137729	44639	83080	265448	10924	27424	38348
	1856	13041	509	423	2317	3010	19300	58258	49584	27717	22297	157856	132686	51445	85943	270074	9965	23407	33372
Roscommon	1655	5728	324	546	1441	1577	9616	32521	20409	15837	18666	94433	62282	41988	43252	147522	8023	18697	26720
	1856	5962	497	587	1672	1504	10122	33802	28507	16997	15105	94411	58636	47477	45228	151337	5251	14590	18841
Sligo	1855	5482	340	804	847	1107	8080	40761	19403	14898	18000	93062	25572	10563	18403	54535	5830	15963	21793
	1856	5696	159	288	1078	1178	8394	40850	19185	16312	16396	92743	24694	11383	20442	56519	4495	10720	15215
TOTAL OF CONNAUGHT	1855	42078	2237	2615	8480	10434	65844	216951	165076	92106	96667	570800	484119	244025	289822	1017966	45334	110097	155431
	1655	44986	2132	2553	9439	10758	69868	221640	163165	102680	86695	578180	470493	286774	309330	1066597	35385	82447	117832
Increase or Decrease in CONNAUGHT		Incr. 2908	Decr. 105	Decr. 62	Incr. 959	Incr. 324	Incr. 4024	Incr. 4689	Decr. 1911	Incr. 10574	Decr. 7972	Incr. 5380	Decr. 13626	Incr. 42749	Incr. 19508	Incr. 48631	Decr. 9949	Decr. 27650	Decr. 37599
TOTAL OF IRELAND		392706 406646	20386 21981	24016 24632	53600 58094	65579 61913	556287 573266	1501296 1579073	758419 778938	570889 620216	879346 806496	3564400 3584723	1734459 1651802	761712 834746	1106171 1201595	3602342 3688143	339231 251789	838374 664144	1177605 915933
Increase or Decrease in IRELAND		Incr. 13940	Incr. 1595	Incr. 616	Incr. 4494	Decr. 3666	Incr. 16979	Incr. 17777	Incr. 26519	Incr. 49877	Decr. 72850	Incr. 20323	Decr. 82657	Incr. 73034	Incr. 95424	Incr. 85801	Decr. 87442	Decr. 174230	Decr. 261672

[*For continuation see page 387 of the Magazine.*

AGRICULTURAL STATISTICS, IRELAND.

GENERAL ABSTRACTS.

SHOWING THE ACREAGE UNDER THE SEVERAL CROPS, AND THE NUMBER OF LIVE STOCK, IN EACH COUNTY AND PROVINCE, FOR THE YEAR 1856.

TO HIS EXCELLENCY GEORGE WILLIAM FREDERICK EARL OF CARLISLE, K.G., &c.,
LORD LIEUTENANT-GENERAL AND GENERAL GOVERNOR OF IRELAND.

MAY IT PLEASE YOUR EXCELLENCY,

On the 20th of August, I had the honour of submitting for your Excellency's consideration a return showing, by counties and provinces, the acreage under flax in 1855 and 1856, and the increase or decrease in the latter year: I now beg to submit general abstracts of the extent of land under crops, and the number and description of live stock in each county and province, in the same years.

The numbers for the latter year have been compiled from returns lately procured by the Constabulary and Metropolitan Police, who have acted as enumerators in their usual efficient manner. On further revision, some slight alterations in the figures may be necessary, but so unimportant that, for all practical purposes, the tables may be regarded as correct.

Your Excellency is aware that the information given to the Constabulary is altogether voluntary; and I feel assured it will afford pleasure to your Excellency to learn, as, I beg to say, it is most gratifying to me to have it in my power to state, that, so far as I am informed by the enumerators—who amounted to nearly 4,000—hostility to the collection of these returns has been displayed by only one landed proprietor in Ireland—a fact most highly creditable to the good feeling and intelligence of all ranks and classes in this country. It would appear, from the reports of the enumerators, that instructions were issued to the tenantry of the proprietor referred to—whose estates are situated in the counties of Leitrim and Donegal—not to afford the required information as to their crops, or the number of live stock on their farms. I have, therefore, taken the returns made to me in 1855 for their holdings, as being the same in 1856. In reference to this subject, I feel it due to the tenant-farmers on these estates to acquaint your Excellency that in former years they afforded all the information required by the enumerators, with the same confidence and good feeling so universally exhibited by their intelligent follow-countrymen; and, but for the directions issued to them in 1856 not to do so, it is reasonable to conclude that they would in this year have followed a similar enlightened course.

GENERAL ABSTRACT, SHOWING, IN STATUTE ACRES, THE EXTENT OF LAND UNDER CROPS, FOR EACH COUNTY AND PROVINCE IN 1855 AND 1856; THAT FOR THE LATTER YEAR HAS BEEN COMPILED FROM RETURNS LATELY RECEIVED FROM THE ENUMERATORS.

PROVINCES AND COUNTIES.	Wheat.		Oats.		Barley, Bere, Rye, Beans, and Peas.		Potatoes.		Turnips.		Other Green Crops.		Flax.		Meadow and Clover.		Total Extent under Crops.	
	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.
LEINSTER:	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Carlow	9573	11713	25781	23984	5066	3760	11061	12475	5965	5875	1262	1267	81	159	25350	25863	84139	85096
Dublin	14199	17348	24323	22782	4860	4035	11977	13373	3484	3570	4094	3787	1	1	45867	44193	108805	109089
Kildare	20698	22823	43749	41175	6190	4137	14231	15900	11226	11123	1927	2144	9	4	49597	46792	147636	144098
Kilkenny	37277	40129	53148	50008	8678	6520	22862	25254	12679	12624	3195	2835	45	46	47403	46517	185257	183938
King's	18574	20244	32623	31372	5661	4441	21772	23848	9375	9639	2584	2541	254	238	40062	40377	130905	132703
Longford	2353	2847	33841	36893	328	497	16258	17262	2730	2800	936	1224	262	388	20156	21136	21864	82947
Louth	9674	14951	38530	34228	22928	20195	12010	14639	9235	9027	2548	2615	190	219	17286	18131	111501	114005
Meath	18764	23398	86831	78302	4870	3633	19235	21893	9904	9261	4005	4007	266	213	64646	60557	208527	201269
Queen's	21500	23327	32587	30681	9683	6967	20875	23401	14231	14168	1958	1634	7	8	51931	50637	152772	150823
Westmeath	4611	6005	54638	51123	1535	1443	18503	19484	8462	5924	2356	2572	197	203	40648	38402	128050	125156
Wexford	23926	29329	66100	80958	41929	38034	27688	28100	18265	16997	4947	4681	825	1551	45736	46571	247416	246421
Wicklow	6622	9097	38314	35320	4600	3485	11844	13433	4528	4557	1090	1261	1	2	55037	58326	120031	120396
TOTAL OF LEINSTER	187771	221211	553465	516739	115443	97147	208280	229072	106079	105565	30902	30768	3138	3032	503725	492402	1707803	1695936
Increase or Decrease in Leinster	Increase, 33,440 Acres.		Decrease, 36,726 Acres.		Decrease, 18,296 Acres.		Increase, 20,792 Acres.		Decrease, 514 Acres.		Decrease, 134 Acres.		Increase, 894 Acres.		Decrease, 11,323 Acres.		Total Decrease, 11,867 Acres.	
MUNSTER:	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Clare	9263	11694	39270	37790	13330	9524	35748	39120	8383	7755	2388	2613	802	949	52292	51998	161586	161443
Cork	49873	57396	150006	152226	39141	32515	81066	90167	53694	52619	10625	11462	2387	1569	104447	104947	491239	502931
Kerry	2799	3549	36356	35525	8206	6379	32114	33810	9796	10106	2315	3052	585	1039	58070	56570	150241	150131
Limerick	17149	22577	45455	42131	12057	7537	35723	43428	11394	9860	2771	2877	243	230	71292	72330	196084	200970
Tipperary	54330	58927	78255	74161	11659	7504	52127	60712	29747	28546	4222	4465	103	99	83934	81976	314377	316390
Waterford	24322	26009	30846	30882	9471	7368	18846	19946	11984	12150	3149	3496	43	49	17681	17304	116352	117184
TOTAL OF MUNSTER	157766	180152	380188	372695	93864	70827	255624	287183	124998	121166	25470	27966	4253	3935	387716	385125	1429879	1449049
Increase or Decrease in Munster	Increase, 22,386 Acres.		Decrease, 7,493 Acres.		Decrease, 23,037 Acres.		Increase, 31,559 Acres.		Decrease, 3,832 Acres.		Increase, 2,496 Acres.		Decrease, 318 Acres		Decrease, 2,591 Acres.		Total Increase, 19,170 Acres.	
ULSTER:	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Antrim	11089	14881	98749	97659	4574	4133	47034	54356	12381	10216	2600	2312	6727	6030	53594	53081	236748	243568
Armagh	12236	14840	78978	74456	2455	1985	31854	35555	8099	7249	3174	2810	9308	10917	25659	26361	171706	174172
Cavan	888	1463	91368	86405	798	910	31233	35071	3173	2756	2952	3249	6034	6024	34957	33903	171381	169781
Donegal	2921	4622	108787	109130	7296	6250	41558	48570	16628	15156	2608	2852	15779	17654	32859	34353	228436	238594
Down	30352	38025	142671	135182	15863	12373	47213	54416	22147	19216	4750	4602	11176	13510	36380	38541	310552	315865
Fermanagh	1416	2122	40875	38764	1110	1096	18227	20201	4252	3817	1681	1832	2005	1934	34714	32933	104280	102699
Londonderry	3201	5424	91990	87017	2084	2368	31983	35464	11451	10301	1454	1545	11795	13959	20379	22310	174337	178388
Monaghan	3466	4942	83562	78244	3711	3456	25899	29184	7061	6903	2129	2440	11858	12137	15877	16404	152563	153710
Tyrone	4701	6663	153782	151584	1538	1741	43648	51410	15235	13867	2977	3580	13230	14746	30842	32192	265958	275786
TOTAL OF ULSTER	70251	92993	890762	858446	30429	34315	318149	364227	100427	89481	24325	25222	87012	96911	284761	290978	1816016	1852563
Increase or Decrease in Ulster	Increase, 22,732 Acres.		Decrease, 32,316 Acres.		Decrease, 5,114 Acres.		Increase, 46,076 Acres.		Decrease, 10,948 Acres.		Increase, 897 Acres.		Increase, 8,999 Acres.		Increase, 6,217 Acres.		Total Increase, 36,547 Acres.	
CONNAUGHT:	Acres	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	Acres.
Galway	18306	20703	81347	79119	10390	8844	52853	60316	15637	17472	8242	8850	544	532	45904	44832	233723	241288
Leitrim	291	396	28780	27590	587	581	23537	25102	1075	871	1193	1515	718	680	28598	28385	84779	85120
Mayo	4638	6086	83543	84249	5396	4252	59087	67250	9558	10604	2193	2227	745	923	18229	16964	183337	192585
Roscommon	4151	5091	59257	57143	488	746	36793	40695	4730	5027	1732	2120	366	436	30214	31356	137758	142614
Sligo	2101	2651	41516	40200	2334	1791	28028	30235	4446	4176	1079	1205	379	377	15660	13941	95543	94576
TOTAL OF CONNAUGHT ..	29987	35017	294443	288301	19195	16214	200248	224108	35449	38150	14439	15917	2772	2948	138605	135478	735138	756183
Increase or Decrease in Connaught, ...	Increase, 5,030 Acres.		Decrease, 6,142 Acres.		Decrease, 2,981 Acres.		Increase, 23,860 Acres.		Increase, 2,701 Acres.		Increase, 1,478 Acres.		Increase, 176 Acres.		Decrease, 3,127 Acres.		Total Increase, 20,995 Acres.	
TOTAL OF IRELAND	445775	529363	2118856	2036181	267931	218503	982301	1104590	366953	354362	95136	99873	97075	106826	1314807	1303083	5688836	5753687
Increase or Decrease in Ireland	Increase, 83,588 Acres.		Decrease, 82,677 Acres.		Decrease, 49,428 Acres.		Increase, 122,289 Acres.		Increase, 12,591 Acres.		Increase, 4,737 Acres.		Increase, 9,751 Acres.		Decrease, 10,824 Acres.		Total Increase, 64,845 Acres.	

ABSTRACT OF CEREAL CROPS.

	1855.	1856.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
WHEAT	445,775	529,363	83,588	—
OATS	2,118,856	2,036,181	—	82,877
BARLEY, BERE, RYE, &c...	287,931	218,505	—	49,428
TOTAL	2,832,564	2,781,617	83,588	132,105

Decrease on Cereal Crops, in 1856 .. .. 48,517 Acres.

TOTAL EXTENT, IN STATUTE ACRES, OF CEREAL AND GREEN CROPS GROWN IN IRELAND IN 1852, 1853, 1854, 1855, AND 1856.

	Wheat.	Oats.	Barley, Bere, Rye, Beans, and Peas.	Potatoes.	Turnips.	Other Green Crops.	Flax.	Meadow and Clover.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1852 ..	353,566	2,283,449	339,591	876,532	356,790	121,565	137,008	1,270,713
1853 ..	326,896	2,157,849	348,642	898,733	399,377	120,133	174,579	1,270,742
1854 ..	411,281	2,045,298	287,151	989,660	320,170	98,777	151,403	1,257,864
1855 ..	445,775	2,118,858	267,931	982,301	366,953	95,136	97,075	1,314,807
1856 ..	529,363	2,036,181	218,503	1,104,590	354,362	99,873	106,826	1,303,983

ABSTRACT OF GREEN CROPS.

	1855.	1856.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
POTATOES, …………………………………………	982,301	1,104,590	122,289	—
TURNIPS, …………………………………………	366,053	354,362	—	12,591
OTHER GREEN CROPS,* …………………………………	95,130	99,873	4,737	—
TOTAL, …………………………………………	1,414,390	1,558,825	127,026	12,591

Increase on Green Crops, in 1856, ………………………… 114,435 Acres.

GENERAL SUMMARY.

Increase on Green Crops, …………………………		114,435 Acres.
Do. on Flax, …………………………		9,751
		124,188
Deduct Decrease on Cereal Crops, …………………	48,517	
Do. on Meadow and Clover, …………………	10,824	
		59,341
Total Increase in the extent of Land under Crops, …………		64,845

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* Mangel Wurzel, Beet-root, Carrots, Parsnips, Cabbage, Vetches, and Rape, are included under this head.

AGRICULTURAL STATISTICS FOR SCOTLAND, 1856.

HIGHLAND AND AGRICULTURAL SOCIETY,
Edinburgh, 30th August, 1856.

SIR,—In compliance with the desire expressed by the Lords of Committee of Privy Council for Trade, that the Statistics of Acreage and Stock for the current year should, if possible, be reported by the 1st of September, instead of being deferred till the publication of the estimates of produce in December, I have now the honour of forwarding to my Lords an abstract of the returns made under these heads.

As the tables are identical in their principle with those of last year, a detailed explanation is unnecessary; and as this forms but a preliminary report, any general observations may be properly reserved for that which will be afterwards submitted with the estimates of produce. The acreage and stock in the hands of tenants occupying land rented at less than £10 in twenty-six counties, and at less than £20 in seven, as ascertained in 1854, should be added to what the tables exhibit, increasing the extent of land in cultivation by 238,170 acres, and the amount of stock by 334,308 head.

I have much pleasure in stating that the returns have been made with the same readiness which has before elicited the approbation of my Lords; and I have again gratefully to acknowledge the valuable assistance cordially rendered by the enumerators, and the gentlemen who co-operate with them in their respective districts.

I have the honour to be, Sir,
Your most obedient servant,
JN. HALL MAXWELL.

James Booth, Esq.,
Principal Secretary of the Board of Trade.

No. I.—ACREAGE.

COUNTIES.	Number of occupants.	Total acreage under a rotation of crops.		Wheat.		Barley.		Oats.		Rye.		Bere.		Beans.		Peas.		Vetches or Tares.		Turnips.	
		1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1858.	1855.
1. Aberdeen	7380	486288½	479058¾	18262	5409¾	7421½	7109	163906½	170037¼	353½	225¼	4194	4741¼	452¾	324¾	329¼	289¼	1957	1021	81273	79612¾
2. *Argyle	1552	71798½	80953¼	685¼	427¼	1197¼	1240¼	23213	22892½	315	374¼	1536¾	1814¼	601¼	636½	117¼	94	131¾	150½	6337¾	6346½
3. Ayr	3381	263311½	258154¼	16872¼	12847½	697¼	682¾	60742¾	61648¼	535½	361½	294½	288¼	3676	3485¼	37¼	34¾	421¼	420	16428¼	16480¾
4. Banff	1721	114527½	111214½	2427¼	1173¼	3943½	3649¾	41491¼	41404¼	34½	88¼	516½	730½	233½	167¾	82¼	80¾	588¼	357½	18284¼	17412½
5. Berwick	740	147301¼	146944	14316¼	9982¾	12738	15119½	81325¼	31793¼	98	54½	56	57	1829	1813½	513¾	670¾	981½	880½	27070¾	26980¾
6. Bute	136	11924	12064¼	1185¼	832¾	141¾	154¼	2445¾	2630¼	4¾	5½	—	—	5¼	11	¼	¼	26¼	25	1165	1188
*Arran	149	6250½	6086	211¼	184¾	12¼	17¼	1635¼	1661¼	22¼	30½	118¾	133¾	123¾	118½	32	40½	2¼	3¼	422¾	421¼
7. *Caithness	623	50405½	47854½	617¾	168	243	243½	19240¾	18288¼	69½	6¼	1740¼	1683½	—	—	41½	—	544	252½	7641¼	7326
8. Clackmannan	224	18131½	19079	2846½	2225½	1624½	1780¾	3518	3971¼	—	½	—	6¼	1525¼	1532½	—	—	181½	143½	1861¼	1832¾
9. Dumbarton	616	41492	42256¼	2543¾	2099	946½	957	10013½	9904¼	11¼	28	27½	27¼	712¾	715	11¼	14	212	164¼	2449¼	2567
10. Dumfries	1941	173429½	174363½	4176¼	8944½	2736¾	2578	50705½	50199½	21½	110½	13¼	81	742	512¼	37¼	20	162¾	184¾	21019	20684½
11. Edinburgh	878	104077¾	102604½	11628	9113¼	10123½	10297½	23181¼	23488¼	8¼	¼	99¼	162¾	1576½	1426¼	181½	144½	1263¼	1135¾	14517¼	13862¼
12. Elgin	1146	81313½	79853¼	8657¾	7298¼	8642½	8508	16938¼	17974¼	676¼	471¼	410¼	494½	97¼	84¼	240½	224¼	375½	240	13163	11967¼
13. Fife	1933	221515¾	218534¼	34099½	26952¼	22817½	25934	42327¾	44137¾	678¾	618½	38¼	34½	3602¾	3441	458	621	1593	1491¼	29739½	28991¼
14. Forfar	2164	219571¾	215270¼	25274½	16282½	17934¾	23135¾	49703½	50896	100	134¼	287½	337	850¼	516½	184¼	271	1382¼	938¼	33270¼	32518¼
15. Haddington	457	99435½	101528¾	18228	17472½	10147¼	10858	15859¼	16692¾	20	82½	31½	44	4219	3930¼	184½	170¼	997¼	1058¼	16378½	16063¼
16. *Inverness	786	42955½	42030¼	2210¼	1539¼	2095	2220¾	13979¼	13704¼	276	125	857½	1034½	44¾	67¼	159¼	162½	271	186¾	5458¼	5286¼
17. Kincardine	1392	100889½	101458½	6080	2767½	7079	7598½	28165	29785¼	195¾	173½	459¼	678¼	586½	460¼	36½	50	395½	228¼	16853¼	16690
18. Kinross	304	33783¼	33132½	1770¾	909½	2474	2867¼	7659	8030½	4½	9¼	13½	1	116	134	35	24	247¼	230	4346½	4270½
19. Kirkcudbright	1395	120972¼	124821¼	2441¼	1715¼	1464¾	1382¼	33758¾	33858¼	58¾	40	55½	19	503	395	2	4½	84½	63	15154½	14535
20. Lanark	2978	209541½	206405½	8978¼	7582	1787¼	2037¾	54803¼	54738	56½	68	299¼	369½	4010¼	3814¾	317¾	362	1688¾	1670½	11443	11341½
21. Linlithgow	458	52511½	52738¾	4643½	3792	3789¾	4057¼	12520	12339	2	3½	51¼	8	1776¼	1657¼	2¼	52¾	509½	416½	5142	4983¾
22. Nairn	434	29705½	29553	2305½	1714½	2721¼	3043¼	7409¾	7752¾	314¼	255	76¾	87	12¼	16½	107	100¾	142½	70½	4647¾	4467
23. *Orkney	273	25572¾	23989¾	40	15	106¾	82¾	8733½	7962¼	48¼	11½	2797	2931½	1½	5	8	7½	76	84½	3328	3016¾
*Zetland	41	1170	1206¼	1	—	3½	18½	889	380¼	—	—	83¾	70	¼	—	—	—	2	¼	121¾	111¼
24. Peebles	306	37010¼	36436¼	213¾	104¾	2121½	2027	10458¼	9910¼	¾	1	13½	27¼	21	19¼	172	182¾	250¼	227	5356¼	5265¼
25. Perth	3622	262565½	280829½	29254¼	22201¾	15666¾	19318½	62760	63051¼	127	113	595¼	773¼	4127	3603¾	381¼	573¾	1261¼	919	31945¼	31351½
26. Renfrew	1207	77660½	75213	5211¼	4495¼	343¼	428¼	16504	16392	8	12	70¾	84½	1492¼	1585¼	7	10¾	194½	192¾	3134¼	3334
27. *Ross and Cromarty	933	72152½	70513½	11823½	8962¼	4765¾	6182¾	15273	16132¼	139¼	149½	219	220¾	427¼	362½	515¼	515¼	1567½	840	11559¾	11387¼
28. Roxburgh	967	126113½	134781	10148	7133¾	10393¼	12462¾	28190½	29198¼	113	38¼	16¼	10¼	1070½	762¾	565¼	588¾	620	574¼	24016¼	24080¼
29. Selkirk	167	11718	11134½	229½	116¼	683¼	677	8324¼	2963½	—	—	3¾	7	23½	½	19½	32	59¾	49	2065¼	1940
30. Stirling	1440	93854¾	91400	6911¼	4985½	6444¼	6773	22654	22378¼	33½	25½	30½	18	4967¾	4776¾	11½	11¼	645¼	616	6197½	5963¼
31. *Sutherland	140	9916¼	10674½	544¼	258	936½	1051¾	2336¾	2461	49¾	18½	118	97¼	12	¼	17	13½	43¼	71	1747½	1833¾
32. Wigtown	1130	126655¼	127880¾	11003¼	7343	1392¾	1589¼	33205¼	34602¼	275½	150	228¾	237½	1048¾	1098¾	34	82¾	216½	183½	16204½	15489½
	42919	3545721¾	3530068½	261842¼	191300¾	165663¼	186082¼	918258½	933662½	4754¼	3692	15385¼	17263½	40488½	37308½	4840½	5456	19096¼	15038¾	459741¼	449404½

ACREAGE—(*continued*).

COUNTIES.	Number of Occupants.	Potatoes.		Mangold.		Carrots.		Cabbage.		Rape.†		Flax.		Turnipseed.		Any other Grain or Root Crop.		Bare, or summer fallow.		Grass and Hay under rotation.	
		1856.	1855.	1856.	1856.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1858.	1855.	1856.	1855.	1856.	1855.
1. Aberdeen	7380	7383½	7498	28½	16½	57½	70½	127	98¼	16½	—	384	610	298½	234	98	121	1147¼	1024	201598½	200665¾
2. *Argyle	1552	5883¾	5178¾	64¼	33¼	35¼	17¼	49¾	27½	10¾	—	12¾	14½	36¾	38¾	26	19½	1170	1343	30342½	40303½
3. Ayr	3381	8724½	8166½	1238¼	828½	411	307¼	342¼	283¾	40¾	—	17¼	69	66½	46½	39	63½	469½	944¼	152258½	151216½
4. Banff	1721	2192¼	2159¼	9¾	9¾	2¾	5	20¼	14¾	1¼	—	60¼	58½	81¾	92¼	93¼	11¼	191¼	426¼	44273	43422
5. Berwick	740	2151¾	2104	155¾	57½	17	14½	15½	11½	270	—	—	2	94½	171½	35¾	153¼	1400½	1574½	54232	55702¾
6. Bute	136	664¼	625¼	8¾	4¾	1	½	2¼	5	—	—	—	—	17¾	4	7½	—	93¾	55½	6154½	6471
*Arran	149	401	342¼	19¾	10¾	1¾	4	11	4¼	—	—	½	—	20	5½	¾	—	172	105¼	3043	3002¼
7. *Caithness	523	1249¾	1442¼	1½	—	¼	¼	16½	9¼	7¼	—	10½	31	19½	14¾	9	1½	269¾	810¼	18683½	18076¼
8. Clackmannan	224	444¼	382¼	8	18½	12½	8	2	4	¼	—	—	¼	18	¼	1¾	—	270¾	834	5817	6838¾
9. Dumbarton	616	2727¼	2378	43¼	37¾	5	6¼	34¾	35¼	—	—	352¾	432½	4½	16	—	7¼	166	330¼	21230¾	22536½
10. Dumfries	1941	6372¾	6300½	116¾	40½	49¾	45¼	35	24¼	562¼	—	12¼	¼	59¼	70¾	15¼	353	352	655	86026	88992¼
11. Edinburgh	878	6668¼	6749¾	124¾	96	91¼	38	76¼	75	33	—	3¼	¾	182	187	118¾	81¼	497¼	441¾	33703	35304
12. Elgin	1146	3563¾	3717	21¾	7¾	4¼	2½	30¼	24¼	16¼	—	¼	1	34½	63	4	12	256¾	251½	28178¾	28519¾
13. Fife	1933	17209	17355	155¾	103½	48¾	33¼	24¾	9¾	4	—	576½	428½	81	56¼	16	58¼	2149	2151½	65898	65817
14. Forfar	2164	14400	14258¼	41¼	9½	31¼	26½	16¾	15¼	30	—	17¼	5¾	24¼	46¾	23	39½	276	376½	75723¼	75518
15. Haddington	457	6082¼	6451½	167	114	109	122¾	36¾	25	27	—	—	—	221¼	298¾	3¼	51¼	981¼	1257	25943¼	26887¼
16. *Inverness	788	3062¼	2916½	15¼	16½	5	2	30¼	25½	—	—	1	3	13	4	4¼	2¼	558	506¾	13914¼	14226¼
17. Kincardine	1392	2893¼	2937	6¼	6	33¾	28	14	9	—	—	2¼	76	56½	44	2	18	114¾	328½	37915½	39581½
18. Kinross	304	1053¾	1053¾	2	1¼	7	2¾	11¾	7½	—	—	15¾	28	44¼	16½	—	¼	168¾	113	15813½	15433¾
19. Kirkcudbright	1395	3112¼	2965¼	100¾	58¼	46½	31¾	10	6	153¾	—	9½	¾	26¾	37¾	—	15¼	287¼	294	63707¾	69399¾
20. Lanark	2978	8733¼	8202¼	114½	80	46½	39¾	251	275	2	—	540¼	746¼	61¼	11¾	132¼	44¼	1073½	1515½	115202	113476¾
21. Linlithgow	458	2044	1925¼	45½	28¼	13	10¾	12¾	10¼	—	—	105¼	189¼	59	70¼	53½	—	340	520¼	21400½	22743¼
22. Nairn	434	1517¼	1542	9	5¾	1¼	—	6½	3¾	—	—	—	—	12¾	8	—	—	102	165¼	10319	10320¼
23. *Orkney	278	1159¼	1301	58½	1¾	6¼	4	38	34¼	6	—	—	¼	22¼	46	6¼	6	308	232	8829¼	8297¼
*Zetland	41	90¾	75¼	—	—	—	¾	7¾	8¾	½	—	—	—	—	—	—	—	11¼	7	458½	535¾
24. Peebles	308	863¼	956	3½	4¼	6½	1¼	2¼	1	30	—	—	—	1½	5¾	—	3	13¼	83¾	17482½	17615¼
25. Perth	3622	17510¼	18171½	38¼	19¼	27½	17¼	29¼	33¾	—	—	31¾	65½	58¾	191¼	23¼	7¾	1430¼	2359½	97297¼	98057¼
26. Renfrew	1207	5935¼	5534½	154	120½	25¾	20¼	96¾	49½	—	—	16¼	43¼	8¼	11½	8¼	32¼	823¼	302½	44125½	42563½
27. *Ross and Cromarty	933	4439	4501½	21¼	14¼	1¼	1¼	13	4	5	—	2¼	½	24¼	37½	90	6	492¼	704	20773¼	20491¼
28. Roxburgh	987	1772¼	1760½	39½	19¼	11½	5	7¾	13¼	148½	—	—	—	37¼	81	20¼	90½	515¼	741½	48422½	57220½
29. Selkirk	167	216	196¼	—	—	½	—	1¼	¼	3	—	—	1	—	½	—	—	75	102¾	5013¼	5048
30. Stirling	1440	3904½	3607	35¾	14½	14¼	9¾	44	35¾	3¾	—	548¾	770½	6¾	38¼	26	—	1401½	1720¼	40972¾	39855½
31. *Sutherland	140	371½	371¼	—	—	¼	3¼	1½	2	—	—	—	1	8	3½	1¼	—	104	43	3629¼	4446½
32. Wigtown	1130	4132½	3843½	793¼	520¾	403¾	310¾	63	44½	35	—	½	1¾	82	54½	1¼	24½	632¼	845½	67202½	61658½
	42919	148930¼	146969¾	3642	2299½	1529½	1191	1483¼	1209¾	1407	—	2723¼	3481½	1777¼	1998¾	859¾	1223½	17715	22462	1475584½	1510044¼

* In the counties marked with an asterisk there are no returns from occupants whose rent is below £20; in the other counties, all at and above a rent of £10 are included.

† There was no separate column for Rape in 1855.

No. II.—STOCK.

COUNTIES.	HORSES.								CATTLE.								SHEEP.								Swine.		Total Stock.	
	1. Horses for Agricultural Purposes above 3 years old.		2. Horses for Agricultural Purposes under 3 years old.		3. All other Horses.		Total Horses.		Milk Cows.		Other Cattle.		Calves.		Total Cattle.		Sheep of all Ages for Breeding.		Sheep of all Ages for Feeding.		Lambs.		Total Sheep.					
	1856.	1855.	1856.	1855.	1858.	1856.	1858.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1858.	1855.	1856.	1855.	1858.	1855.	1856.	1855.	1856.	1855.	1856.	1855.
1. Aberd'en	16718	16203	3631	3382	2551	2709	22900	22274	36222	34669	74344	73995	31223	31817	141789	140681	36787	38109	47393	43230	28504	28060	112684	109399	9631	8673	287004	281027
2. Argyle	3376	3829	1787	1790	1049	893	6712	6512	18651	18796	29306	28590	11694	12992	59651	60378	418997	412934	155671	151641	266081	249454	840729	814023	2834	3458	909926	884377
3. Ayr	7003	6804	1924	1812	915	1086	9872	9702	38670	39286	29745	28809	14276	15913	82891	84008	131980	123525	28509	33444	98554	88404	259043	245373	11442	12483	363048	351566
4. Banff	4529	4405	1220	1025	716	705	6465	6135	8890	8512	16856	17174	8140	7947	33886	33633	16879	16318	8862	9694	12619	11729	38360	37741	3273	2987	81984	80496
5. Berwick	4055	4182	1227	1100	862	890	6144	6272	3800	3911	9194	9569	4023	4213	17017	17693	88192	91300	68194	54448	80455	94377	236841	240125	4275	4290	264277	268380
6. Bute	390	390	230	208	32	38	652	636	1541	1592	1875	1844	920	964	4336	4400	4497	3873	2105	2023	3618	3018	10220	8914	378	426	15581	14376
Arran	296	299	66	64	30	26	392	389	1175	1213	1337	1142	534	660	3046	3015	14205	12925	3998	3531	9926	9374	28129	25830	291	380	31858	29394
7. Caithn's	2080	2004	502	471	324	314	2906	2789	4188	3908	7897	7013	3609	3738	15694	14659	30329	29744	20166	19093	23363	21610	73858	70447	1220	1149	93678	89044
8. Clackm'n	793	721	196	205	151	186	1140	1112	1114	1059	2879	2704	829	868	4822	4631	7082	6896	3288	3890	6462	4965	16832	15751	912	898	23706	22492
9. Dumbtn	1349	1318	504	648	302	319	2155	2186	5274	5110	5686	5745	2079	2289	13039	13144	30218	27322	8898	12645	22662	21075	61778	61042	844	1042	77818	77414
10. Dumfries	5277	5304	1818	1795	1306	1317	8401	8416	13736	14025	24670	24217	8777	9613	47183	47855	243783	241505	38666	37854	186023	178631	468472	457920	13101	14374	537157	528635
11. Edinbro'	3445	3390	692	674	857	938	4994	5002	5255	5352	8351	8801	2472	2749	16078	16902	64428	66628	26828	26123	52214	54792	143470	147543	5266	5225	169808	174672
12. Elgin	3537	3526	785	720	528	545	4850	4791	6074	5964	11523	11162	5068	5308	22665	22434	27756	28726	11551	14171	20433	20856	59740	63753	3727	4074	90982	95047
13. Fife	8419	8224	2358	2321	1471	1498	12248	12043	8819	8739	23869	23845	7923	8455	40611	41039	12263	12708	32639	35630	12204	12778	57306	61116	8734	8863	118899	123059
14. Forfar	7491	7447	1806	1750	1206	1220	10503	10417	12299	12266	26585	27410	10665	11232	49549	50908	27336	28989	47433	50059	22853	22171	97622	101219	6247	6383	163921	168927
15. H'd'ngtn	3353	3268	570	516	749	697	4672	4481	2086	2069	6399	5508	1437	1627	9922	9204	29347	29003	32324	29447	32453	28403	91124	86853	4923	4676	113641	105214
16. Invern'ss	2404	2330	671	634	570	521	3645	3485	8175	8301	9951	9758	5452	6002	23578	24061	292087	285919	129017	143158	167508	138619	589512	567694	1474	1667	618203	596907
17. Kincard'n	3065	3177	603	647	538	554	4206	4378	6568	6831	13912	13940	5969	6653	26449	27424	7559	8987	14522	12736	5813	5394	27894	27117	2850	2705	61399	61624
18. Kinross	953	1039	485	522	131	138	1569	1699	1595	1599	4611	5002	2082	2023	8288	8624	7763	6869	10144	9398	7903	6720	25810	22987	869	948	36536	34258
19. Kirkc'db	3747	3745	1448	1466	793	862	6983	6073	9107	9206	24012	21434	6731	7118	39850	40758	137725	134786	43124	44345	120754	113517	301603	292648	6433	7252	353669	346731
20. Lanark	5765	5704	1506	1336	1399	1425	8670	8465	31309	30186	20740	20386	9373	10129	61422	60701	89859	86291	20313	21135	66817	69193	176989	176619	6998	7666	254079	253451
21. Linlithg.	1659	1587	467	434	452	313	2578	2334	3446	3434	8103	5840	1797	1975	11346	11249	4471	2861	7229	8755	4813	4029	16513	15646	1494	1524	31931	30752
22. Nairn	1378	1410	312	289	155	127	1845	1826	2392	2275	4500	4137	1851	1892	8743	8304	17998	21316	6982	6914	10710	10257	35690	38487	1103	1489	47381	50106
23. Orkney	1373	1314	425	400	165	185	1963	1899	2621	2538	3972	3417	2080	2173	8673	8128	4822	6083	1816	1414	4458	4318	11096	10815	1152	1337	22884	22179
Zetland	73	74	22	9	401	465	496	548	303	298	789	780	185	182	1277	1260	3142	3318	954	843	2109	1684	6205	5845	52	50	8030	7703
24. Peebles	985	975	256	238	206	199	1447	1412	2502	2581	3258	3037	1721	1736	7481	7354	91570	89708	20648	21470	65949	61533	178167	172711	1216	1215	188311	182692
25. Perth	11069	10883	2905	2844	1973	1879	15947	15586	22400	22189	40130	40739	18661	20032	81191	82970	247640	248927	134762	125455	176791	170465	559193	544847	8418	9039	664739	652442
26. Renfrew	2275	2272	681	744	521	607	3477	3623	11414	11621	7762	8297	3117	3595	22353	23513	9672	10516	5343	6139	9048	9196	24061	25850	1446	1808	51337	54794
27. Ross and Cromarty	3250	3173	759	728	537	518	4546	4414	5165	5008	8117	7174	3691	4008	16973	18190	133536	143859	88264	78716	85109	85441	306909	288015	3836	4557	332264	313176
28. Roxb'rgh	3661	3710	695	752	1094	1008	5450	5470	4401	4462	8974	9461	3721	4008	17096	17931	228273	232559	43647	40010	176775	176231	448695	448800	3917	4271	475158	470472
29. Selkirk	394	397	98	71	138	122	630	590	729	697	1164	1012	430	444	2323	2153	78663	79135	3060	3577	57747	52396	139470	135108	557	322	142780	138173
30. Stirling	3640	3525	1146	1108	556	848	5342	[illegible]	8524	8721	14673	14533	5333	5858	28530	29112	37313	42909	15096	12919	30137	29685	82546	85513	2348	2488	118788	122392
31. Sutherl'd	551	565	119	128	198	221	868	[illegible]	1074	1138	2057	1849	524	655	3655	3642	95794	91443	61734	61275	51125	47835	208653	200553	405	550	213581	205659
32. Wigt'wn	4156	4018	1482	1383	598	808	6238	[illegible]	10522	10697	18264	17985	7318	8181	36104	36863	40084	42960	12070	13342	32110	32419	84264	88721	5493	6001	132097	137664
	123009	121190	33391	32100	23504	23938	179904	[illegible]	300041	288483	473505	488309	193765	207044	967311	974818	2712950	2707950	1145448	1138521	1964080	1848429	5822473	5694900	128944	134350	7006037	6931295

ORIGINAL AGRICULTURAL STATISTICS, ENGLAND, 1856.

AN ESTIMATE OF THE GENERAL YIELD OF THE CROPS

OF WHEAT, BARLEY, OATS, BEANS, PEAS, TURNIPS AND MANGEL WURZEL, AND POTATOES, AS SUPPLIED BY OUR OWN CORRESPONDENTS, AND BROUGHT DOWN TO OCTOBER 20TH.

PLACE.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	TURNIPS AND MANGEL WURZEL.	POTATOES.
BEDFORD—							
Bedford	Under an average of the last two years; large breadth sown	Less than average, and much sprouted; small breadth sown	Short breadth sown, and fair yield	Much over an average crop	A good average crop	An excellent crop, especially mangolds	Small; one-third diseased, and but little grown.
Stockwood, near Luton	7 loads of 5 bushels per acre	5 quarters per acre	Over 7 quarters	—	—	An average crop	Not diseased.
Park Farm, Woburn	40 bushels per acre	44 bushels per acre	72 bushels per acre	38 bushels per acre	83 bushels per acre	Swedes and turnips above an average; mangolds an average	About 5 per cent. diseased.
BERKS—							
Abingdon	5½ quarters per acre; quality very good	7 quarters per acre, much injured by the rains	9 to 10 quarters per acre; quality fine	Under aver.; quality indifferent and soft	But little grown; crop considered uncertn	An average, but fine crop in many parts	Size small; average crop; but little disease.
Birkhampstead, nr. Hungerford	Nearly an average	A bad yield; quality inferior; very much sprouted	About an average; condition good	—	Damaged by wet	Below an average	Very bad yield, and much diseased.
Clapton, near Hungerford	About an average	Over an average; much wasted in gathering; short breadth sown	Over average yield	Over an average	A full average	Swedes good; mangold never better; forward turnips a failure	Not an average yield; small in size; but slightly diseased.
Newbury	A bare average yield	Acreage short; yield full average, but much sprouted	A good average	A full average	Over an average	Turnips very deficient; mangolds good full crop	Short crop, and one-third diseased.
Woolley Park, near Wantage	An average crop	An average crop	Over an average	Over an average	—	Turnips an average; mangolds under an average	Under an average, and some disease.
BUCKS—							
Aylesbury	3½ to 4 quarters per acre; condition bad	A fair crop, and good quality	Middling crop, the yield deceptive	Quite an average crop	An average crop	Turnips small and light; mangolds large and coarse	Crop large, but the late grown are much diseased.
Orchil Gerrard's Cross	35 bushels per acre	30 bushels per acre	50 bushels per acre	—	—	Very good crop	—
CAMBRIDGE—							
Cambridge	4½ to 5½ quarters per acre	Crop good, but sprouted; less breadth sown	A good crop	Winter and spring both good	A good crop	A good crop	Good crop; some disease.
Stapleford, near Cambridge	An average crop; the fen wheat 17½ to 18 stone the coomb	Quite an average crop, but a short breadth sown	A full average crop	More than an average	More than an average	Turnips on light soils very fine; mangolds remarkably fine	On high lands no disease; elsewhere very much so.
Stretham Grange, near Ely	An average crop	An average crop	Under an average	Over an average	An average crop	Turnips much injured by wireworm; mangolds an average crop	An average crop, but half diseased.
Wisbeach (1)	Rather over an average	An average crop	Under average	Good crop	Rather over an average	Turnips not good; mangolds very good	Nearly all diseased.
Wisbeach (2)	Over average; quality fine	Fair crop; but little grown	Average in quality and quantity	Good crop, and well secured	Large yield and good quality	Fine crops; full breadth sown	Very much diseased.
CHESHIRE—							
Barnton, near Northwich	An average crop	An average crop, but small breadth sown	Over an average	Under an average	Few grown; under average	Good crops, particularly mangolds	An average crop; the early sorts diseased.
Ashton Hays, near Chester	Under an average; many acres injured by the rain	What is grown is an average	A good average, but many acres spoilt by wet	Very generally good crop	—	Crops very good, except on wet and cold lands	Quality and yield good; more than half diseased.
CORNWALL—							
Grampound	Full average; large breadth sown	Under an average; small tillage	Abundant crop, and over average	—	—	Both good crops	Very much diseased.
Launceston	4 quarters per acre	4½ quarters per acre, but the samples are various	6 quarters per acre; the crop universally good	—	—	A fair crop; in other parts of Cornwall much injured by the fly	The crop promised well, but two-thirds are lost by disease.
Truro	An average crop	Under an average crop	An excellent crop; over an average	—	—	An average crop	Moderate crop, and not diseased much.
CUMBERLAND—							
Cummersdale, near Carlisle	One-sixth above an average; quality better than last year	Under an average, and quality various	Fully an average, and quality good	About an average	—	An average crop, but rather backward	Average quantity of land planted, but much diseased.
Linstock, near Carlisle	Above an average; large breadth sown	Average; not so much as usual sown	Deficient in high districts, but average	—	—	Lately much improved	Fair crop, but diseased.
DERBYSHIRE—							
Sutton, near Chesterfield	Average; partially injured by wet	Above an average where grown	Over an average; injured by weather	Over an average; late crop	—	An average crop	One-third diseased; not much grown.
Barton Blount, near Derby	4 quarters per acre, but much damaged by blight and rain	—	A good average crop	5 quarters per acre	—	Turnips very bad and blighted	Plenty, but small, and much diseased.
South Normanton	3 quarters per acre	Quality coarse; 4½ quarters per acre	Average crop, but coarse and uneven in colour	Below an average	Below an average	Good crops	Large breadth sown; yield moderate; one-third diseased.
DEVON—							
Plymouth	An aver. crop, but 1-3rd injured; 10 per ct. increase of tillage	Good crop, but less land under cultivation	Where grown, crop good	—	—	Good crops	Early crop free from disease; late crop nearly all lost
Tavistock	A full average crop	Under an average, and the samples better than usual	Good crop, and above an average	—	—	Turnips good, injured in places by wireworm; mangolds very good	Early sown good; late crop much diseased.
DORSET—							
Bryanston, near Blandford	Full average	Over an average	Full average	Average	Over an average	Good where well managed; short crop in other parts	Average crop, and no disease.
DURHAM—							
Fence Houses, nr Chester-le-Strt.	3½ quarters per acre	4½ quarters per acre	5 quarters per acre	2¼ quarters per acre	An average; few grown	Below an average crop	An average crop, but one-fourth of them diseased.
Plawsworth, near Durham	An average crop, but much sprouted	Small breadth sown; crop average, but injured	Average crop, and much injured	—	Above an average	Under an average	Not worth digging up, from disease.
Sunderland	A full average; quality fair; not half yet secured	—	—	—	—	An average crop	A good crop, but half diseased.
ESSEX—							
Chelmsford	3½ quarters per acre; the light and mixed soils better produce than the heavy.	5 quarters per acre	Under an average	4 to 5 quarters per acre	4 quarters per acre	Mangolds good; turnips good; swedes half a crop	Good crop; about one-sixth diseased.
Skreens, near Chelmsford	Under an average	Under an average	A good crop	A good crop	A good crop	Turnips bad, but mangolds a good crop	Light small crop, but diseased.
Writtle, near Chelmsford	On heavy land 20 to 28 bushels; mixed soils 24 to 36 bushels; light soils 28 to 40 bushels per acre.	Deficient in quality and breadth with 1855; barely an average	Various; heavy land from 3 to 4 qrs., on light land 5 to 8 qrs.	36 bushels per acre	32 bushels per acre	Turnips indifferent; mangolds good	Early good, the late crop diseased.
Great Ilford	Heavy land 3 qrs. per acre; on light soils 3 to 5 qrs. per acre	On light soils an average, on heavy under an average	Below an average	Good crop; over an average	About an average	In general a good crop	A full crop, but much diseased.
Maldon	2 to 3 quarters per acre; on light soils better	A good yield and fair quality	Under an average	Excellent crop, and fine quality	A good yield, but not what was expected	Very good crop indeed	Early ones good, but the late ones diseased.
Saffron Walden	4 quarters per acre; the Rivett wheat unusually fine	An average crop, but 1-5th less sown	An abundant crop, but not fine quality	Crop average, and quality fine	Above an average, and well secured	A full average crop	Large breadth planted; full average crop, not much diseased.
GLOUCESTER—							
Leigh Court, near Bristol	Below average; early sown well saved; others much sprouted	Average crop	Below average	—	—	Turnips patchy	Bad and blighted.
Cirencester	Over an average; quality various, from sprouting; large acreage sown.	Average crop; quality fine, except where sprouted	Fair crop; quality middling	Fair average quantity and quality	Crop good and fine	Both good crops	Good crop, partially diseased; size small.
Fairford	Above an average, but a good deal damaged	Below average, and bad quality	Where grown, good	Where grown good	Where grown, good	Early turnips good, late middling; mangolds good	Much diseased; not much planted.
Gloucester	Average crop, and 30 per cent. extra sown	Over an average; quality various	Full average where grown	Over an average	Over an average	Very good crops	Crop not much injured.
Oddington, nr Stow-on-the-Wold	28 bushels per acre	34 bushels per acre	40 bushels per acre	34 bushels per acre	32 bushels per acre	Turnips and swedes a thin crop; but little mangolds	Small in size, and but little disease.
HAMPSHIRE—							
Basingstoke	28 bushels per acre, but much sprouted	38 bushels per acre, but sprouted	48 bushels per acre	30 bushels per acre	32 bushels per acre	Turnips bad; but mangolds good	Good yield, but much diseased.
Bentley, near Basingstoke	2 to 4½ quarters per acre; the lower quantity predominates	A good average crop	An average crop	An average crop	Above an average	Turnips variable; but mangolds good	Altogether much worse than usual.
Bishop's Waltham	An average crop; the bulk secured in good order	Yield good; breadth sown short; good bright samples scarce	Crop good, and average full; quality fine	What few grown good yield and quality	But very little grown	Mangolds promise an abundant crop; turnips lately much imprvd.	Early crop excellent quality, and free from disease; not so the late crop.
Southampton	Rather below an average; quality fine to inferior	Short breadth sown; quality variable; under average	Superior crop to last year	The few grown good	Few grown, but good crop	Turnips suffered from the Black Palmer; mangolds pretty good	Crop good, but diseased after digging.
Strathfieldsaye, Winchfield	Large breadth sown; crop under an average, and much sprouted	Over average crop; less breadth sown; sprouted	One-fifth under an average, but quality excellent	Over an average; and quality excellent	Over an aver.; 2-3rds in good condition	Turnips under, and mangolds over an average crop	Over an average in acreage and crop, but two-thirds unfit for human food.
Newport (Isle of Wight)	2 quarters 4 bushels per acre, but plenty of straw	5 quarters 4 bushels per acre; quality inferior	5 quarters 4 bushels per acre	Over an average crop	Over an average crop	Mangold good crop; turnips in some places patchy	Large acreage sown; one-fourth of the late ones diseased.
HEREFORDSHIRE—							
Hereford	Above an average from extra acreage, but injured by the rains	Under average; only ½ quantity land sown; quality pretty good	About an average, but not much sown	Yield good, but not over an average	A full average crop	Mangolds tolerably good; turnips variable	Excellent crop in quantity, but diseased.
HERTS—							
Hitchen	On light land bad, on heavy land good; say an average	Below an average; a good part sprouted	An average crop	Exceed an average crop	Few sown, but those over an average.	Both crops very fine	Small size, under yield, and diseased.
Broxbournbury, near Hoddesdon	Under an average, as some had to be ploughed up from failure	An average crop	Under an average crop	Very indifferent crop	—	Turnips middling crop from various causes; but mangolds good crop	A fair crop, but disease is showing itself lately.
HUNTS—							
Wornditch, near Kimbolton	Large quantity sown, but scarcely an average crop	Not an average crop	Over an average	An average crop	Over an average	Turnips much injured, but short acreage; mangolds good	Diseased, partially and slightly.
St. Neots	28 bushels per acre	38 bushels per acre	48 bushels per acre	35 bushels per acre	30 bushels per acre	Turnips under average; mangolds full average	Average crop; one-fourth diseased.
KENT—							
Cobham, near Gravesend	4 quarters per acre; very uneven; quality light	6 quarters per acre; much injured by rain; small breadth sown	8 quarters per acre	4½ quarters per acre; crop good	4½ quarters per acre	Turnips very backward; mangolds very good crop	Very much diseased.
Maidstone	4 quarters per acre	An average crop	An average crop	An average crop	An average crop	They look a splendid crop, but the leaves blighted	Partially diseased.
Preston Hall, near Maidstone	An average crop; extra acres grown	Under an average	An average	Over an average	Over an average	Very good crops; over an average	One-third bad; not fit for food.
Benenden, near Staplehurst	Below an average; what is thrashed yields badly	Very little sown	An average crop	Below an average crop	Below an average crop	Both are good crops	Very much diseased.
Goodnestone, near Wingham	5 quarters per acre	6 quarters per acre, but washed by rains	9 quarters per acre	5 quarters per acre	4 quarters per acre	Turnips above an average; mangolds an average crop	One-third diseased; not much sown.
LANCASHIRE—							
Lancaster (1)	A good average crop	—	A good crop	A good average crop	—	Very good crops	Good crops, but slightly diseased.
Lancaster (2)	4 quarters per statute acre	An average crop	Over an average crop	Over an average crop	—	—	An average crop, but half diseased
Liverpool	3½ to 4 quarters per acre	Scarcely an average	7 quarters per acre	Not many grown	—	Turnips 25 to 28 tons per acre	200 bushels to the acre; one-third diseased.
Kenyon, near Manchester	Above an average, but much damaged; some fields still out	In Speke the usual quantity is housed in good condition	About an average breadth sown, but much sprouted from wet	Good crops everywhere, especially those grown by nitrogen and bone manure.	—	Mangolds over average yield; turnips a fair average	An excellent crop; the disease almost abated.
Preston	Over an average, and the quality good	Not much grown, but what is, good	Average crop, and quality fine	Promises over an average	—	Turnips a fair average	A large crop, but much diseased.
Furness, near Ulverstone	5 quarters per acre; more than usual breadth sown	5 quarters per acre; much less breadth than usual sown	2 quarters per acre	Inferior, and under an average	—	Average produce, and above average breadth sown	Average crop, but half of them diseased.
Warrington	30 bushels per acre	About an average crop	Above an average	Above an average	—	An average crop	An average crop, but extensively diseased.
Warwick, near Warrington	Over 30 bushels per acre	Above an average crop	Above an average	—	—	These crops are growing fast, and will exceed an average	Full average; quality good; old sorts diseased; new sorts free.
LEICESTER—							
Reasby, near Leicester	4 quarters per acre; quality fair	5 quarters; quality bad and sprouted	8 quarters per acre	4 quarters per acre	Under an average	Turnips good and an average; mangolds over an average	Good crop, but slightly diseased.
Skeffington Vale, near Leicester	A good average crop	On light lands an average, strong lands under; much damaged	Rather under an average	An average, but many fields nearly spoiled, being not yet harvested.	An average crop	Turnips generally light; mangolds very good	Tolerably good crop, and but little diseased.
LINCOLN—							
Grimsby	Crop varies exceedingly; a large breadth sown; average yield	Less breadth sown than usual, but a full average yield per acre	An average crop	Aver. crop, if they can be all harvested	—	Turnips very good crop; not much mangolds grown	Potatoes small, and yield below an average; much diseased also
Lincoln	Crop and quality good, some sprouted; large breadth sown	Average yield and quality; small breadth sown	Under average; quality moderate	Crop good, quality fair	Good breadth sown, and large produce	First-rate crops	Large breadth sown, but three-fourths diseased.
Long Sutton	Full average, in fair condition	Fair average yield, but damaged by rain	Full average; injured by weather	Fair yield; great crop of straw	Very good crop	Unusually fine and plentiful	Small; not an average, and much diseased.
Spalding	4 to 5 quarters per acre, but samples are much sprouted	Fair average crop, but discoloured and sprouted	8, 10, and 11 quarters per acre; over a full crop	A fair yield; quality never better	Over an average, but damaged by weather	Highly spoken of; very favourable season for both these crops	Yield per acre good, but three-fourths diseased.
Algarkirk, near Spalding	A full average crop	Not an average; quality irregular	Below an average; acreage limited	A full average crop	Much injured by the weather	Are now doing well	A moderate crop, but more than half diseased.

PLACE	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	TURNIPS AND MANOEL WURZEL.	POTATOES.
MIDDLESEX—							
Edmonton	An average crop, but one-third less than last year	—	An average crop	—	—	Both good crops	An average crop, but from one-third to two-thirds diseased.
Enfield	Below an average; one-third less than last year	An average, but little grown	Under an average	An average crop	Over an average	An average crop	Under an average, and one-third diseased.
Uxbridge	An average crop	Under an average crop	An average crop	Under an average crop	Under an average crop	Over an average crop	Under an average, but slightly diseased.
MONMOUTH—							
Chepstow	Full average crop, and a large breadth sown	Very good crop; an average yield	An average crop	Good crop, but few grown	Rather above an average	Swedes and mangolds very good; turnips under an average	Small yield, and partially diseased.
The Wyelands, near Chepstow	80 bushels per acre	5 quarters per acre	50 bushels per acre	—	—	Turnips a good crop, but mangolds a very good crop	Not ten per cent. diseased.
NORFOLK—							
Diss	4 to 5 quarters per acre; quality good	Fine quality; over average	Over average where grown	Over average	An average	Both first-rate crops	Fair crop, but diseased.
Great Yarmouth	A full average crop	Good average crop, but the breadth sown small	Small quantity sown, and much discoloured	Not ⅔ of a crop, and much soft	Deficient in quantity sown and yield	Turnips not good; but mangolds very good	Not much grown, and partly diseased.
Norwich	Over an average, from the increased breadth sown	A good crop, but less sown than in other years	A full average produce	An average crop	Under an average produce	Large crops of both turnips and mangolds	Partially diseased.
Wells	5 quarters per acre	Good yield and fair quality; not a good breadth sown	Yield good where grown	—	Excellent where grown	Never was so good a crop grown	Crop and quality good, but half diseased.
NORTHAMPTON—							
Far Cotton, near Northampton	A good average crop; but middling quality	A good crop, but very much injured from sprouting	—	Quite an average	—	Both excellent crops	One-third diseased.
Peterborough (1)	4 qrs. per acre, 60 to 62lbs. per bush.; a large breadth sown	Less than usual sown, but full average yield	Less breadth sown than usual; yield variable	An average crop	An average crop	The late rains have made these crops tolerably good	Considerable breadth sown, and some slightly diseased.
Peterborough (2)	Full average yield in the fens, but not in the uplands	Not average as regards quantity; great deal unfit for malting	An average yield; but small quantity sown	An abundant crop	Fully an average crop	The crops backward, but now promise well	Yield per acre less than last year; little disease.
NORTHUMBERLAND—							
Howick, near Alnwick	3¾ quarters per acre	5¼ quarters per acre	From 4⅝ to 5¾ quarters per acre; some damaged by rains	3¼ quarters per acre	—	Turnips under an average; mangolds an average	An average crop, but partially diseased.
Glendale and Bambro'shire	One-eighth above an average sown; yield a moderate average; three-fourths damaged by rain.	1-6th less average sown; full average yield; quality stained, but not much sprouted.	Promised a good yield, but very much damaged by sprouting and shedding.	A full crop, ⅓ over last year's produce	Produce bulky, but small breadth sown	White varieties are late, but promise well; few mangolds grown	Acreage over last year; much blighted in the fields, but few yet lifted.
Newcastle-on-Tyne	One-sixth more sown than usual; early crop good, late much sprouted.	Short breadth; 2-3rds in good order, the rest damaged	Early good, the late crop injured	A fair crop	Good crop, but sprouted	Early crop good, but late-sown deficient	Largely cultivated, and much diseased.
NOTTS—							
Ossington, near Newark	4½ qrs. per acre, but promised more when the crop was standing	—	—	—	—	—	—
South Muskham, near Newark	Average crop, and a large breadth sown	Below average, and less breadth sown than last year	More than average	Over an average	Over an average	Over an average	Small, and very much diseased.
Nottingham	Not much under an average	An average crop, but sprouted	Not much grown	A good crop	Not many grown	Very good crops	Various; some fields much diseased; others less.
Thurgarton Priory, nr Southwell	Not more than an average crop, even with the extra acres sown this year.	Full crop, but much damaged by wet	An average crop	Under an average	—	Very good crops	Diseased; in some cases two-thirds of the crop.
OXON—							
Adderbury	35 bushels per acre	44 bushels per acre, some sprouted	—	40 bushels per acre	—	A fair average crop	Not a good yield; one-third diseased.
Bicester	An average crop	Bulk large, but quality inferior	An average crop	Quite an average	An average crop	Very good crops	Large yield, but one-fourth diseased.
Farnborough, near Banbury	Quite an average	Rather above average	Very good crop	An average crop	An average crop	Fair crop, but not an average	Over an average, but much diseased.
Henley-on-Thames (1)	4 quarters per acre	3 quarters 4 bushels per acre	7 quarters per acre	—	—	Very good crops	A good yield, but one-third diseased.
Henley-on-Thames (2)	Above an average	Above average	Fine crop	—	Indifferent crop	Bad crop	Diseased.
SHROPSHIRE—							
Porkington, near Oswestry	26 bushels per acre	Better than last year	Above an average	—	Very good crop	A good crop	A heavy crop, and but little diseased.
Madeley, near Wellington	Great breadth sown, and over an average crop	Average crop; less breadth sown; few malting samples	An average crop	An average crop	An average crop	On good soils first-rate, under an average on others	Better crop than for many years, but slight disease.
SOMERSET—							
Cricket St. Thomas, near Chard	Over an average crop	An average crop	Under an average crop	Under an average crop	An average crop	Turnips an average; mangolds over an average	Under average, and much diseased.
Street, near Glastonbury	Various yields, even from 2 to 6 qrs.; quality not so good as last year.	Over an average yield; less than average grown; but little prime malting quality.	Yield from 4 to 7 qrs.; quality superior to last year	32 to 48 bushels per acre; quality not equal to last year.	Fine crop, but not average breadth sown	Swedes not equal to last year; mangolds more than average crop	Very large breadth sown, and not so much diseased as other years.
Kingsweston, near Taunton	28 bushels per acre	36 bushels per acre	32 bushels per acre	32 bushels per acre	32 bushels per acre	Turnips patchy, mangolds 25 tons to the acre	Very small, and decaying fast.
Nynehead Court nr Wellington	Above an average; one-third injured	Above average; one-third injured	—	Below an average	—	Swedes bad, white better, mangold fine	Very much diseased.
STAFFORD—							
Burton-on-Trent	Over an average, and large breadth sown	Over an average, but small breadth sown	An average crop	Over an average	—	Turnips very bad; mangolds an average	An average, about 7 per cent. diseased.
Berkley Lodge, nr Burton-on-Trnt	From 40 to 44 bushels per acre, or 20 per cent. over last year	An average crop, but all more or less damaged	An average crop	An average crop	—	Both are average crops	—
SUFFOLK—							
Bury St. Edmund's	Good average crop	Breadth short, yield large, quality various	Fair crop; quality moderate	Full average crop	Full average crop	Both good crops	Crop good, but much diseased.
Stowlangtoft Hall, near Bury St. Edmund's.	3½ quarters per acre	4½ quarters per acre	7 quarters per acre	5 quarters per acre	—	Never a better crop	One-third diseased.
Framlingham	28 to 30 bushels per acre	Average; one-third unfit for malting	—	Full average; quality splendid	—	Very fine crops; beet splendid	One-third diseased.
Ipswich (1)	30 to 32 bushels per acre; large breadth sown	Full average yield; small breadth sown	—	Over an average	Over an average	Very good	Partially diseased.
Ipswich (2)	3½ to 4 quarters per acre; large breadth sown	5 to 6 quarters per acre; one-quarter less than usual sown	7 to 8 quarters per acre, but few grown	4 to 6 quarters per acre	4 to 5 quarters per acre	Turnips a failure; mangolds good	Over average, but much diseased.
Bramfield, near Saxmundham	An average crop	Under an average	—	Over an average	Over an average	Swedes a failure; white turnips a fair crop, but mangold heavy	A good crop, but one-third diseased.
Henham, near Wangford	Over an average on light land; under on heavy	Over an average on light land, under on heavy	—	Over an average	Over an average	Mangolds good, swedes middling, white turnips good	Few grown; not good.
Wickham Market	4 quarters per acre; but partially blighted	4 quarters per acre; good on light, but bad on heavy land	5 quarters per acre	4 quarters per acre	—	Both very good crops	Very bad crop, from disease.
Woodbridge (1)	Breadth large, and over an average crop	Very little grown, but an average crop	—	Under an average crop	Average crop	Abundant crop	Not much grown.
Woodbridge (2)	An average crop	Under an average crop	An average crop	Over an average crop	Over an average crop	Turnips in many places a failure; mangolds exceedingly good	A fair crop, but one-third diseased.
SURREY—							
Croydon	Under an average, but quality fine	Over an average, but damaged by rain	An average crop; Tartarian fine in quality	—	An average; quality reported good	Turnips late and weak; mangolds capital	Great crops, but diseased in some cases seriously.
Copt Hill, Epsom	Less than an average crop, but plenty of straw	A good average crop	Over an average crop	—	—	18 to 20 tons per acre where saved from fly	Worthless, except for pigs, from disease.
Farnham	5 quarters per acre, but injured by rain	6 quarters per acre	12 quarters per acre	—	Very good crop	A good crop	Two-thirds of the crops destroyed from blight.
Guildford	Below an average crop	Pretty fair crop	—	Over an average	Over an average	A good crop	Diseased to some extent.
Hampton Wick	Under an average crop	Under an average crop	An average crop	Under an average	Over an average crop	Under an average	Over an average crop, but much diseased.
SUSSEX—							
Chichester	3 quarters per acre	4 quarters per acre	7 quarters per acre	Not so good as last season	Above an average	Turnips indifferent; mangolds good	Yield fair, but much diseased.
Fairlight Hall, near Hastings	3 sacks below an average	—	Above an average	An average	An average	Very good crops	Very bad crop.
Petworth (1)	Nearly an average	A good crop, but damaged by rain	Quality good, and crop over an average	First-rate crop	Very good crop	Turnips a partial crop, but mangolds very good	Diseased everywhere; very bad.
Petworth (2)	3½ quarters per acre	4 quarters per acre	4½ quarters per acre	3½ quarters per acre	4½ quarters per acre	A good average crop	Very badly diseased.
WARWICK—							
Sutton Colefield	An average crop	Over an average crop	An average crop	—	An average crop	Fair average crops	An average crop, but one-fifth diseased.
Shenton, near Nuneaton	From 3 to 4½ quarters per acre	Under an average crop	About an average, but much damaged	Under an average; quality indifferent; few yet harvested	A good average	Swedes half a crop; common turnips an average	Small; under average, and much diseased.
WESTMORELAND—							
Kendal	An average crop, but little grown here	Over an average; all not yet got in	Over an average; one-third not yet housed	Few grown	—	Swedes good; other kinds deficient	Under an average, and one-third diseased.
WILTS—							
Fonthill, near Hindon	3½ quarters per acre	5 quarters per acre	6 quarters per acre	—	—	All good crops	—
Rood Ashton, near Trowbridge	3 to 3½ quarters per acre	4 quarters per acre; not much grown in the Vale	4 to 5 quarters per acre	3 to 5 quarters per acre; variable yield	3 to 5 quarters per acre; variable yield	Mangolds 20 tons per acre; but few grown	But little disease.
Warminster	Average yield and above the average quantity sown	Less sown than usual; yield a full average, but much sprouted	Above an average	Above an average crop	A full average crop	A most wretched crop	A fair crop, and but little disease
Wylye, near Heytesbury	Under an average	An average crop	An average crop	—	—	Turnips—first sowing bad, but the late ones promising; mangolds an average	Slightly diseased.
WORCESTER—							
Kidderminster	Yield average, but sprouted; large breadth sown	A fair average; less breadth sown	—	—	Best crop for years	Turnips variable; mangolds fine	One-third diseased.
Prestwood, near Stourbridge	An average crop	An average crop	—	—	—	Turnips under an average; swedes an average	An average, but slightly diseased.
Orleton, near Worcester	3 quarters per acre	4 quarters per acre	5 quarters per acre	3½ quarters per acre	—	From 15 tons of bulbs per acre; over an average	An average crop, but very badly diseased.
Temple Laughelme, near Worces.	5 quarters per acre	6 quarters per acre	—	6½ quarters per acre	—	Over an average crop of both	Very small in size, and but little diseased.
YORKSHIRE—							
Bridlington	A good average, and quality fine	An average; quality fair, but some sprouted	Under an average; some still in the fields	Much under an average	Good average; quality fine; some badly stacked	Turnips a good crop	Very much diseased.
Doncaster	3 to 6 quarters per acre	A full average	A fair average	Over an average	An average	Good crops	Small in size, and diseased.
Cantley, near Doncaster	Above an aver. in East Riding; 4½ qrs. per acre nr. Doncaster	Average crop, but little sown	Generally below average	Above an average	—	Above an average	Diseased everywhere.
Fickly-cum-Clayton, nr Doncastr	One-eighth under an average on cold clay soils	Under an average	—	Good crop, but mostly unsecured yet	—	Pretty good crop	Very much diseased; one-third bad.
Skelrode Park, near Doncaster	27 to 30 bushels, instead of 36 to 40, what should be	4½ qrs. per acre instead of 5½ to 6; weight short; corn small	Short produce	36 to 40 bushels, but damaged by wet.	Few grown, and those but middling	Only a middling crop, although they did promise well	Almost all gone; worse disease than ever.
Esbolt, near Leeds	Under an average, say 4 quarters, and in upland districts much sprouted.	An average crop, but in uplands not yet all secured	A good average, but injured in quantity and quality	Over an average	—	Swedes promising, but late; the other crops under an average	Yield small, and under an average; one-sixth diseased.
Malton	An average yield, and in good condition	Yield considered good, but mostly unfit for malting	Few yet secured; a good yield expected	—	—	Generally good	Very much diseased.
Richmond	Below an average, and much injured by wet	An average crop; little grown	Above an average	Average crop	Average crop	Swedes above, Norfolk below an average	Much diseased.
Ripon	A full average crop	An average crop, but less breadth sown	An average crop	An average crop	—	Never better crops known	Large extent planted; average crop; slightly diseased.
Selby	An average crop on the whole, but varies much	Quantity sown short; yield much sprouted	Under an average	Very good crop, but damaged by rain.	—	Never saw better White Globe, Swedish, and mangolds	All more or less diseased.
Barkness Hall, near Scarborough	Above an average; one-third injured by wet, and one-fourth of the crop still in the fields.	A full average, but half the crop uncarted and sprouted	A full crop, but injured by weather; straw light, and short	—	—	Under an average, and damaged by fly	Half a crop, and every field diseased.
York	Full average; large breadth sown	Best crop for many years, not average sown	Average sown and yield	Below an average	—	Best crop ever known	A good crop; slightly diseased.
WALES—							
Ruthin, N.W.	3 quarters per acre	4½ quarters per acre	5 quarters per acre	—	—	An average crop	Average crop, but much diseased.
Carmarthen, S.W. (1)	Full average crop, and quality superior	Full average; quality fine; weight 2lbs. over last year	Over average; very fine quality	—	—	Both crops good	Average breadth sown; diseased, but not virulent.
Carmarthen, S.W. (2)	3½ quarters per acre	Full average; in capital condition	A full average; in capital condition	—	—	Capital average crops of both kinds	Abundant crop; no disease worthy of notice.
Hendre St. Dogmells, Cardigan	Over an average	An average crop	An average crop	An average crop	An average crop	Over average crops	Much over an average, and but slightly diseased.
Abergele	An average; some complaints of yield after thrashing	An average crop, but much damaged	An average crop, but damaged	—	—	Both over an average	Under an average yield, and one-half unfit for use.
Brynloch, near Mold	Under an average	Very good crop	An average crop	—	—	Both good crops	Good crop; the early sorts diseased.

AGRICULTURAL STATISTICS, IRELAND.

GENERAL ABSTRACTS.

(CONTINUED FROM THE TABLES GIVEN HEREWITH.)

Total Quantity of Live Stock in Ireland, in each of the Years 1852, 1853, 1854, 1855, and 1856.

	No. of Horses.	No. of Cattle.	No. of Sheep.	No. of Pigs.
1852	525,088	3,095,667	2,613,943	1,072,658
1853	539,785	3,383,309	3,142,656	1,144,945
1854	545,929	3,497,901	3,722,219	1,342,549
1855	556,287	3,564,400	3,602,342	1,177,605
1856	573,266	3,584,723	3,688,143	915,933
	Increase.	Increase.	Increase.	Decrease.
Difference in Numbers from 1852 to 1856	48,178	489,656	1,074,200	156,725

Total Value of the Live Stock in Ireland in each of the Years 1852, 1853, 1854, 1855, and 1856, calculated according to the Rates assumed by the Census Commissioners of 1841, viz.:—For horses, £8 each; Cattle, £6 10s.; Sheep, 22s.; and Pigs, 25s. each.

	Horses.	Cattle.	Sheep.	Pigs.	Total.
1852	£4,200,704	£20,117,935	£2,875,337	£1,340,823	£28,534,799
1853	4,318,280	21,991,509	3,456,922	1,431,181	31,197,892
1854	4,367,432	22,736,357	4,094,441	1,678,186	32,876,416
1855	4,450,296	23,168,600	3,962,576	1,472,006	33,053,478
1856	4,586,121	23,300,700	4,056,957	1,144,916	33,088,701
	Increase.	Increase.	Increase.	Decrease.	Increase.
Difference in Value from 1852 to 1856	£385,424	£3,182,765	£1,181,620	£195,907	£4,553,902
Ditto ditto between 1855 and 1856	£135,832	£132,100	£94,381	£327,090	£35,223

It appears from the foregoing abstracts that in 1856 there were 5,753,681 statute acres under tillage in Ireland, being an increase of 64,845 acres over 1855. The cereal crops collectively exhibit a decrease of 48,517 acres divided among oats, barley, bere, rye, beans, and peas; wheat shows an increased area of 83,588 acres—445,775 acres having been sown in 1855, and 529,363 acres in 1856; of oats, there were 2,036,181 acres in 1856, being a decrease on 1855 of 82,677 acres. Barley, bere, rye, beans, and peas, covered 218,503 acres in 1856, which is a diminution of 49,428 acres compared with the previous year.

In "Green Crops," potatoes show an increase of 122,289 acres, or upwards of one-tenth more than in 1855—the numbers being in that year 982,301 acres, and in 1856, 1,104,590 acres. There were under turnips 354,362 acres in 1856, or 12,591 acres less than in 1855. "Other Green Crops"* show a small increase of 4,737 acres—the number being, in 1855, 95,136 acres, and in 1856, 99,873 acres. There were 106,826 acres returned as under flax in 1856, or an increase of 9,751 acres over last year. Although the area under this important crop does not equal its extent in 1852, 1853, or 1854, yet it is very gratifying to observe that in 1856 it has not continued to decrease. The increase in Ulster alone amounts to 8,999 acres; the province of Leinster also shows an increase in flax of 894 acres, and Connaught of 176 acres; but in Munster there is a decrease of 318 acres. In meadow and clover there is a decrease of 10,824 acres in 1856, there having been 1,314,807 acres in 1855, and 1,303,983 acres in 1856.

The returns for 1856 exhibit an increase in the number of horses, cattle, and sheep; but pigs show a large decrease compared with 1855. The total number of horses in 1856 was 573,266, being 16,979 more than in 1855. Horses returned as kept for agricultural purposes increased by 13,940; for traffic and manufactures, by 1,595; and for amusement or recreation, by 616. Yearling horses are more numerous, by 4,494, than in 1855; but those under one year decreased by 3,666. The total number of cattle in Ireland in 1856 is 3,584,723, being an increase over the preceding year of 20,323. Of the entire number 1,579073 were returned as milch cows, 778,938 as two years old and upwards, 620,216 as yearlings, and 606,496 as under one year—these latter being 72,850 under the number in 1855—the decrease being caused, in some measure, by the circumstance of the collection of the statistics having commenced on the 2nd of June in this year; whilst in 1855 it did not commence until the 16th of July—six weeks later.

Sheep show a general increase of 85,801 in 1856, the numbers being—in 1856, 3,688,143; in 1855, 3,602,342. Those under one year increased 95,424, and tups and wethers, 73,034; but ewes decreased by 82,657. It is a very favourable indication of the progress of agriculture in Ireland, to find that the number of sheep has steadily augmented from 2,106,189 in 1841, to 3,688,143 in 1856, being an increase of 1,581,954, or more than one-half, in fifteen years. There were 1,177,605 pigs in 1855, and 915,933 in 1856, being a decrease in the latter year of 261,672, or more than a quarter of a million; those under one year diminished by 174,230, and those one year old and upwards by 87,442. This decrease affects every county in Ireland except Londonderry, and may be, in some degree, accounted for by the fact noticed in the preceding paragraph, that in 1855 the collection of the statistics commenced on the 16th of July, whilst in 1856 it began on the 2nd of June—*six weeks earlier;* the number of pigs littered during this period will therefore not appear in the Returns for

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* Mangel Wurzel, Beet-root, Carrots, Parsnips, Cabbage, Vetches, and Rape are included under this head.

1856, as the small farmers so arrange the management of their stock that the young pigs make their appearance about the middle of July, and are thus sufficiently old to consume the small potatoes which are abundant in October, when the general crop is being dug out. There cannot be any doubt but many calves and other young animals were also born during the interval of the six weeks above referred to. In future years, however, the comparison of the stock will not be disturbed from this cause, as the Returns will be collected about the same time as in the present year, in accordance with the recommendation of the Select Committee of the House of Lords on Agricultural Statistics, in the session of 1855.

Having just received a copy of the Agricultural Statistics of Scotland for 1856, published on the 30th ultimo, I conceive it will be interesting to give the following table, showing the Total Acreage under Crops, and the number of Live Stock, as they appear in the general abstracts for both Ireland and Scotland in the years 1855 and 1856:—

TABLE I.—RETURN, SHOWING THE ACREAGE UNDER CROPS IN IRELAND AND SCOTLAND, IN 1855 AND 1856, ALSO THE INCREASE OR DECREASE IN 1856.

CROPS.	IRELAND.				SCOTLAND.			
	Acreage under Crops.		Increase or Decrease in 1856.		Acreage under Crops.		Increase or Decrease in 1856.	
	1856.	1855.	Increase.	Decrease.	1856.	1855.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	529363	415775	83588	—	261842¼	191300¾	70541½	—
Oats	2036181	2118858	—	82677	918258½	933662½	—	15404
Barley, Bere, Rye, Beans, and Peas	218503	267931	—	49428	231131¾	249802¼	—	18670½
Total, cereal crops	2784017	2832564	Decrease, 48517		1411232½	1374765½	Increase, 36467	
Potatoes	1104590	982301	122289	—	148930¼	146969¾	1960½	—
Turnips	354362	366953	—	12591	459741¼	449404½	10336¾	—
Other green crops*	99873	95136	4737	—	29795	22961¼	6833¾	—
Total, green crops	1558825	1444390	Increase, 114435		638466½	619335½	Increase, 19131	
Flax	106826	97075	9751	—	2723¼	3461¼	—	738
Meadow and clover	1303983	1314807	—	10824	—	—	—	—
Grass and hay under rotation	—	—	—	—	1475584½	1510044¼	—	34459¾
Total extent under crops	5753681	5688836	Total increase, 64845 acres.		3528006¾	3507606½	Total increase, 20400¼ acres.	
Total area of each country	Ireland, according to the Ordnance Survey,		20811774 statute acres.		Scotland, according to the Census of 1851,		20947462 statute acres.	

* Under this head are included Mangel Wurzel, Beet-root, Carrots, Parsnips, Cabbage, Vetches, and Rape.

TABLE II.—RETURN, SHOWING THE NUMBER AND DESCRIPTION OF LIVE STOCK IN IRELAND AND SCOTLAND IN 1855 AND 1856; ALSO THE INCREASE OR DECREASE IN 1856.

Description of Stock.	IRELAND.				SCOTLAND.			
	Number of Stock.		Increase or Decrease in 1856.		Number of Stock.		Increase or Decrease in 1856.	
	1856.	1855.	Increase.	Decrease.	1856.	1855.	Increase.	Decrease.
Horses	573266	556287	16979	—	179904	177229	2675	—
Cattle	3584723	3564400	20323	—	967311	974816	—	7505
Sheep	3688143	3602342	85801	—	5822478	5694900	127578	—
Pigs	915933	1177605	—	261672	126944	134350	—	7406

With reference to the agricultural statistics for Scotland, as given on the following page, Mr. Hall Maxwell states—"The acreage and stock in the hands of tenants occupying land rented at less than £10, in twenty-six counties, and at less than £20 in seven, *as ascertained in* 1854, should be added to what the tables exhibit, increasing the extent of land in cultivation by 238,170 acres, and the amount of stock by 334,308 head." The number of occupants whose acreage and stock were omitted from the Scotch returns of 1855 and 1856 is stated to have been 42,229 in 1854; having then amongst them 29,008 horses, 129,469 cattle, 149,432 sheep, and 26,399 swine. The entire number of occupants of those farms in Scotland which contained the crops and stock given in the above tables was only 42,919. The number of occupants and holders of stock from whom the statistics are collected in Ireland is upwards of 600,000, and these returns include the crops and stock of *every* occupier and stockholder in this country. It would therefore appear that the entire number of land and stockholders in Ireland may be set down as being 600,000, and in Scotland 85,148.

It will be seen from the following tables that in both Ireland and Scotland there has been a *decrease* in the extent under oats, and under the collective crops, "barley, bere, rye, beans, and peas;" and a considerable *increase* in the breadth under wheat. Potatoes have also *increased* in both countries, largely in Ireland, to a small extent in Scotland. Turnips have diminished in Ireland, whilst they have increased in Scotland; the acreage under "other green crops" is larger in both countries. In stock, horses and sheep have increased, and pigs decreased, both here and in Scotland; whilst cattle have increased here and dearcased in Scotland.

Your Excellency is aware that in connection with the agricultural statistics, I have for the last four years had returns made to me by the constabulary, showing the extent to which weeds are permitted to grow, and in most cases *to shed their seeds*, on the sides of highways, railways, and canals, as well as on the various farms of the country. On this subject I have the honour to give, in the Appendix, copies of two letters addressed by me to their lordships, her Majesty's Judges of Assize, also of circulars to the county surveyors, and to the directors of every railway and canal in Ireland; and I beg to take this opportunity of acquainting your Excellency how deeply sensible I am of the kind and considerate manner in which my request to the Judges to bring the subject before the various grand juries was received and acted upon by their lordships, not only on the last spring circuit, but more particularly during that lately concluded; and I am informed by communications from almost every county, that the several grand juries have given directions to the county surveyors to take all necessary steps to prevent the great injury to the farming classes which has hitherto arisen from the growth of weeds along the sides of public roads. I would here take the liberty of remarking that your Excellency's observations, at the meeting of the Royal Dublin Society last April, and also at the late cattle show of the Royal Agricultural Society, at Athlone, as to the lamentable prevalence of weeds in Ireland, have had the happiest effect. In answer to the circular which I took the liberty of addressing to the directors of railways and canals, I have to acknowledge the receipt, in several instances, of very courteous replies; copies of these I have felt it to be my duty to forward for insertion in the public papers; feeling that the assistance of the press, which has hitherto been most liberally afforded to me on all occasions, is of the greatest importance, by making generally known the great injury and loss which arise from the unchecked growth of weeds on the farms and along the highways of the country. Every observer, and even the general traveller, must be struck with the great neglect on this important matter, which, with few exceptions, exists in almost every part of Ireland.

I beg to mention that having brought this subject before the Commissioners of National Education, and suggested to them the many advantages that must arise by instructing their teachers to direct the attention of children in the numerous schools under their control to the great importance of destroying weeds when found growing on their parents' farms; I have received a reply promising every assistance in the matter; and have furnished to Mr. Macdonnell, the resident commissioner, 1,000 copies of my circular to county surveyors, to be distributed by the teachers then in training on their return home; and I have learned that 6,000 of these circulars have since been procured by the Commissioners, for circulation amongst their schools. The Committee of the Church Educational Society have also promised their valuable assistance with the pupils in their schools, and also the Poor Law Commissioners, through the medium of the masters and teachers in workhouses, by instructing the children in attendance as to the advantages which must arise to the community by the practice of destroying weeds. The governors of Erasmus Smith's schools have also promised their friendly aid.

The Masters in Chancery, upon all of whom I waited personally, have unanimously taken the subject into their consideration, and, I am informed, purpose recommending that an order should be issued requiring receivers over the estates under the Court to use their influence with the tenantry to keep their farms free from weeds.

The Commissioners of Public Works have also directed the removal of weeds from all works in progress under their control, such as those of arterial drainage; roads, &c.

Copies of my correspondence with her Majesty's Judges, and with the several public bodies and other parties, upon the subject of the destruction of weeds, are given in the Appendix; and I trust they will not be considered undeserving of attention.

The following extract from the works of that eminent man and real patriot Sir John Sinclair, first President of the Board of Agriculture, quoted in the "Rural Cyclopædia," will be read with interest, as exhibiting the immense loss* arising from the neglect of removing weeds from growing crops, and is highly valuable as being the record of actual experiment:—

"All plants which grow naturally among a crop that has been sown may be regarded as *enemies* to that crop. The destruction of such plants, therefore, must be considered as one of the most important branches of the agricultural art, for if that is neglected, or even but slovenly performed, the crops may be reduced to the amount of one-fourth or one-third of a fair average crop, even upon the very best soils. Besides, it merits consideration, that if weeds are suffered to exist, the full advantages of manuring land, and many other improvements, can only be partially obtained. Nor is this all: the mixture of weeds in the soil prevents the crops from receiving the beneficial influence of the atmosphere, sucks up that moisture so essential for the growth of the crop sown, tends more than any other circumstance to injure the crop when lodged by violent winds or heavy rains, augments the risks at harvest (for a crop that is clean may be ready for the stack-yard in much less time than is required to harvest it, when encumbered with weeds), and the seeds of these intruders deteriorate the quality of the grain. Notwithstanding all the injuries thence sustained, how many are there who hardly ever attempt to remove weeds in an effectual manner? This negligence is the more to be blamed, because were farmers at the trouble of collecting all sorts of weeds before they had formed their seeds, and of mixing them with rich earth, with lime, or fermenting them with dung, they would soon be reduced into a soft pulpy mass, and in this way a pernicious nuisance might be converted into a valuable manure.

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* See an able article on this subject in the *Freeman's Journal* of the 27th August, 1856.

"Various *experiments* have been tried to ascertain the positive advantage derived from carefully weeding one part of a field, and leaving another part undone; among these the following, made with peculiar accuracy, may be safely relied on:—

1. Seven acres of light gravelly land were fallowed, and sown broadcast: one acre was measured off, and not a weed was pulled out of it; the other six were carefully weeded. The unweeded acre produced 18 bushels; the six weeded acres 135 bushels, or 22½ per acre, which is 4½ bushels, or ¼ more produce in favour of weeding.
2. A six-acre field was sown with barley, in fine tilth, and well manured. The weeding, owing to a great abundance of charlock, cost 12s. per acre. The produce of an unweeded acre was only 13 bushels, of the weeded 28. Difference in favour of weeding 15 bushels per acre, besides the land being so much cleaner for succeeding crops.
3. Six acres sown with oats; one acre ploughed but once, and unmanured, produced only 17 bushels. Another six acres ploughed three times, manured, and weeded, produced 37 bushels. This experiment proves that oats require good management, and will pay for it as well as other crops. Ten bushels of the increased produced may be fairly attributed to the weeding, and the other ten to the manure.

"The importance of weeding, both to the individual and to the public, is such, that it ought to be enforced by law. At any rate, a regulation of police for fining those who harbour weeds, the seeds of which may be blown into their neighbours' ground, can have no injustice in principle. In England the petty constable might be required, by precept from the high constable, to give in presentments to the Quarter Sessions, containing a list of all persons who suffered weeds to run to seeds in their hedges or lands, such presentments to be particularly specified to the court. Those referring to the coltsfoot to be given in at the Lady Day sessions; and those referring to thistles, rag-weed, &c., to be given in at the Midsummer sessions. An order of court might then be made for the immediate removal of such nuisances; and if not complied with, the offender should be fined a sum not exceeding five pounds: one-half to the informer, and the other half to go for the relief of the poor. If, in consequence of such a system being enforced, from four to five bushels of wheat, fifteen bushels of barley, and ten bushels of oats additional were raised in all the fields in the kingdom, whose crops are injured by weeds, the benefit would be well worth the labour and expense, and the farmers would soon find that, however anxious they may be to have their lands tithe free, yet to have them weed free is of still greater importance. On the whole, keeping his land in a clean state ought to be a principal object with every farmer; and if this be not carefully attended to, he may rest assured of paying dearly for his neglect. But the losses which he suffers do not remedy the injury which the public sustains from this slovenly conduct.

"In several countries the legislature has interposed its authority for the destruction of weeds. By a regulation in France, *a farmer may sue his neighbour who neglects to destroy the thistles upon his land at the proper seasons,* or may employ people to do it at the other's expense. In Denmark there is a law to oblige the farmers to root up the corn marigold, *Chrysanthemum segetum.* But the oldest regulation for that purpose was probably in Scotland, a statute of Alexander II., about the year 1220, having been directed against that weed, which was considered to be peculiarly pernicious to the corn fields. The statute is very short, and ably expressed. *It denounces that man to be a traitor 'who poisons the king's lands with weeds, and introduces into them a host of enemies.'* Bondsmen who had this plant in their corn *were fined a sheep for each stalk.* Under the authority of that law, Sir William Grierson, a Scottish baron, was accustomed to hold *Goul* courts for the express purpose of fining the farmers in whose growing crops three heads or upwards of that weed were found. Such a plan, if generally adopted, would soon extirpate weeds; and as by a *clause introduced into many leases* (and which ought to be universal) the landlord is empowered to cut down these weeds at the expense of the tenant, if the latter neglect to do it himself; it is much to be regretted that so useful a regulation should not be generally enforced. The policy of *some legislative provision* for this purpose has been frequently suggested. A clause enforcing the extirpation of weeds in hedges along the sides of roads passed the House of Commons, but was thrown out by the Lords. It is to be hoped that so useful a measure, even on a more extensive scale, will soon be passed into a law. By some it is recommended that the destruction of weeds on the sides of roads should be done at the parish expense; others by the road surveyors, and the expense to be stated in their accounts. * * * *

"Though it is impracticable to extirpate annual weeds altogether either by summer fallow or turnip culture, yet the number of weeds may be so much lessened by these means as to prevent them from materially injuring corn crops. Two measures are necessary for that purpose: first, to bring the seeds within the limits of vegetation; and secondly, to destroy every weed that vegetates, thus regularly lessening the original stock. As the seeds of annual weeds are naturally furnished with the means of preservation while stored in the ground, it is absolutely necessary to bring them into life before their destruction can be effected. This is accomplished by the operations of ploughing, harrowing, and rolling; by which the ground is pulverized and reduced, whilst the seeds are brought to the surface, or so near it as to allow their speedy vegetation. All the seeds within two or three inches of the surface may be expected to vegetate according to circumstances, such as richness of soil, fineness of mould, and the degree of moisture which may prevail when the above processes are executed. When the first crops of weeds appear above the surface a second ploughing should be given, by which that crop will instantly be destroyed, and a foundation laid for producing another crop. Harrowing and rolling should again be resorted to; and in this way several crops may be annihilated in warm and moist seasons before the turnips are drilled, more especially if attention has been paid to harrow and roll the land after every ploughing, so that sufficient moisture may be preserved to insure vegetation. When under turnips both the hand and horse hoe should be constantly employed whenever weeds appear; and upon no account should a single one be allowed to run to seed. By paying due attention to these measures many farms which formerly were a nest of seed-weeds are now brought into such order that the weeds are kept under subjection, and easily managed. In this way the destruction of many annual weeds may be accomplished before the turnip-seed is sown, and the seeds of almost every annual weed locked up in the ground may be brought to the surface, and within the reach of vegetation. Besides, the several horse and hand hoeings given to the turnip crop serve to destroy every annual weed as fast as it appears; and if the seed-furrow given the corn crop which succeeds the turnips is not taken deeper than the horse-hoeing furrow (and a greater depth is unnecessary) few weeds will appear in the corn crop which afterwards follows. As grass seeds are always sown in the improved districts with the corn crop that succeeds turnips, no annual weeds can appear in that season; but it very often happens in the succeeding year, from ploughing the clover stubble a little deeper than the seed furrow given to the crop which succeeded turnips, that a fresh growth of annual weeds make their appearance. To get the better of these enemies, some experienced farmers have hand-weeded the crops which followed clover, at an expense not less than from ten to twenty shillings per acre, and evidently much to their advantage; whilst others have resorted to the drill-husbandry to get quit of annual weeds. The great object of both was to procure clean crops, each being perfectly satisfied that if their crops were full of weeds, the productive powers of the soil would not only be deteriorated, but that the amount or value of those crops would be also considerably lessened.

" Owing to the nature of the soil and climate, many perennial weeds are much more abundant in Scotland, and also in Ireland, Wales, and the north and west of England, than in other countries where the soil is drier and the climate more temperate. * * *

" With regard to docks and thistles, the method of getting rid of them is perfectly obvious; all that is required being to fallow the ground well in the first instance, and to exterminate the plants afterwards whenever they appear. This may be accomplished by pulling them up by the root in every corn field when the weather is moist, and cutting them over in all the grass lands before they have perfected their seeds; though cutting should only be resorted to when the weather is so dry as to prevent pulling these weeds out of the ground. The same attention ought to be paid to the destruction of nettles, rag-weeds, mugwort, and the mountain daisy. Every one of these weeds ought to be pulled up by the root, if that measure can be accomplished; but where that is impracticable they ought to be regularly cut down by the scythe, in which way their increase will at least be prevented. This operation should always be performed before their seeds arrive at maturity; otherwise the ground may thence be stocked with fresh seed to an extent not much less than if the cutting process had been neglected."

The injurious effects of weeds is scarcely to be wondered at when their extraordinary and almost *incredible fecundity* is taken into consideration. The following table (with the exception of the Irish names, for which I am indebted to Dr. O'Donovan, and Mr. Eugene Curry, M.R.I.A.) is taken from Professor Buckman, as quoted in the *Gardener's Chronicle and Agricultural Gazette*, of the 12th of last July :—

" SEEDING OF WEEDS.—One of the most fertile sources of the continuation of weeds is that of constantly allowing them to seed on the land. Now the enormous increase which may result from seeding may be gathered from the following table of observations made upon a few of our common species :—

Botanical Name.	Irish Name.	Common Name.	Number of Flowers.	Number of Seeds each Flower may bear.	Number of Seeds on a single Plant.
Senecio vulgaris	Grunnasg	Groundsel	130	50	6500
Stellaria media	Fliodh	Chickweed	50	10	500
Agrostemma githago	Cogul-arbhuir	Corn cockle	7	370	2590
Lychnis dioica	Rós-fiadhain	Campion	25	137	3425
Papaver rhœas	Cailcin dearg	Red poppy	100	500	50000
Sinapis arvensis	Carran buidhe	Charlock	400	10	4000
„ nigra	Sgealler dubh	Black mustard	200	6	1200
Galium tricorne	Coinnleach leaptha	Corn bed-straw	100	2	200
„ aparine	Luibh-an-ladhair	Clivers [Cleavers]	550	2	1100
Sonchus arvensis	Fothannan	Corn sow-thistle	100	190	19000
Carduus nutans	Fothannan cumhra	Musk thistle	25	150	3750
Æthusa cynapium	Fionnas	Fool's parsley	300	2	600
Ervum tetraspermum	Roilléith	Tare	60	3	180
Daucus carota	Carràn Fiadhain	Wild carrot	600	2	1200
Pastinaca sativa	Meacanfiadhain	Wild parsnip	600	2	1200

" Now, it is not likely that each individual plant would always perfect the quantities of seeds above tabulated; but the list gives a pretty accurate notion of the numbers of seeds which might be perfected under circumstances favourable to their development, and from it will at once be gathered the important practical fact that, allowing for the casualties to which seeds are constantly liable, yet enough would be left where seeding is allowed but for a single year, to give trouble for many years after.

"It cannot be too earnestly urged *that weeds be destroyed before their seeds are ripe, or indeed nearly ripe*, as the ripening process is often completed by the juices in the stems, especially of pulled weeds: hence groundsel and thistles, when pulled and laid by, as we saw last year, yet ripened much seed; and their involucres, opening in the sun, were wafted on the breeze to an indefinite distance. And it should be recollected that one—the primary head—may ripen long before the rest, so that a tolerable weed-growth may follow from a delay which has allowed only this one head to perfect its seed. Each plant of groundsel might in this way be increased 50-fold, each plant of corn sow-thistle 190-fold, and a single head of musk-thistle may produce an increase of 150-fold."

And in the number of the same useful periodical for November 18, 1854, another list of weeds is given, from which the following are selected :—

Botanical Name.	Irish Name.	Common Name.	Number of Seed vessels or Flowers to each Plant.	Number of Seeds to each Vessel or Flower.	Number of Seeds to each Plant.	When gathered in 1854.
Capsella bursa pastoris	Sraidin	Shepherd's purse	150	30	4500	September 9.
Sisymbrium officinale	Lus-an-oir	Common hedge mustard	450	12	5400	October 13.
Heracleum sphondylium	Goran (or Goranach)	Cow parsnip	2500	2	5000	August 17.
Convolvulus arvensis	.. ..	Corn bindweed	200	3	600	September 26.
Galeopsis ladanum	Neanntog	Henbit nettle	500	4	2000	„
Bartsia odontites	.. ..	Red bartsia	400	12	4800	October 1.
Leontodon taraxacum	Castsearbhan	Dandelion	12	170	2040	„
Centaurea jacobea	Gob-an-Ghiusain	Hardhead scabious	50	80	4000	September 10.
„ nigra	.. ..	Blackhead	50	60	3000	„
Anthemis cotula	Brean-lus	Stinking chamomile	271	150	40650	September 23.
Matricaria chamomilla	Moidiur	Mayweed	150	300	45000	October 14.
Chrysanthemum leucanthemum	Easpug-ban	Ox-eye daisy	45	300	13500	September 18.
Arctium lappa	Copog tuathail	Burdock	613	40	24520	October 1.
Sonchus oleraceus	Bleacht Fheothadan	Sow thistle	100	250	25000	September 6.
Carduus acaulis	.. ..	Stemless thistle	6	100	600	September 8.
Papaver dubium	.. ..	.. ..	100	600	60000	October 14.
Rumex obtusifolius	Copog sraide	Common dock	13000	..	13000	September 15.
Euphorbia exigua	.. ..	Dwarf spurge	500	3	1500	September 19.
„ peplus	Geirneimh	Petty spurge	400	3	1200	September 11.
„ helioscopia	.. ..	Sun spurge	324	3	972	October 14.
Lapsana communis	Duillheog bhaighte	Nipplewort	560	15	8100	September 23

Annexed are the names of some of the most noxious weeds, with compound flowers, which I have been informed by Doctor Mackay, author of the "Flora Hibernica," grow wild in Ireland, and all of which produce seeds in the greatest quantity:—

COMMON NAME.	BOTANICAL NAME.
1. Spear plume thistle	Cnicus lanceolatus.
2. Marsh plume thistle	Cnicus palustris.
3. Creeping plume thistle	Cnicus arvensis.
4. Welted thistle	Carduus acanthoides.
5. Slender-flowered thistle	Carduus tenuiflorus.
6. Dandelion	Leontodon taraxacum.
7. Ox-eye daisy	Chrysanthemum leucanthemum.
8. Corn marygold	Chrysanthemum segetum.
9. Rough hawkbit	Apargia hirta.
10. Autumnal hawkbit	Apargia autumnalis.

Of so much importance has the eradication of weeds been considered in the colony of Victoria, that an Act has been recently passed to insure their destruction: the owner or occupier of the land on which they grow may be ordered by a justice of the peace to destroy them, and is liable to a fine if he does not comply—a course which, if followed in this country, would be gratefully received by the farming classes, and be productive of great national benefit, as, according to the experiments of Sir John Sinclair, already referred to, the land, *when kept free from weeds, will yield a much greater amount of produce.*

It will be gratifying to your Excellency to learn that, in addition to the letters given in the Appendix, promising assistance in the improvement of Irish agriculture by the eradication of weeds, I have received from very many influential parties, to whom I am personally unknown, communications expressive of their entire approval of what has been termed by some of them, the "National crusade against weeds." I also learn from copies of almost every journal in Ireland, kindly sent to me by the editors, that the press has, without exception, given its powerful aid to the same object—one which, most happily, has received your Excellency's marked approbation. And I confidently trust, from the opinions so unequivocally expressed in every quarter, that much and permanent good will be effected by bringing the present great neglect on this subject prominently under public observation.

As I find that misapprehensions exist in some quarters relative to the steps taken to insure accuracy in filling the returns by the constabulary, I have given, in the Appendix, copies of the instructions issued by me to the several enumerators, and also of the forms upon which the extent of land under tillage and the number of live stock were collected.

I beg to state that the classifications of the holdings, and the preparation of the usual abstracts by baronies and poor-law unions, together with the tables relative to mills for scutching flax, and those as to the prevalence of weeds on the sides of highways, and also upon farms, are in progress, and shall be submitted to your Excellency as soon as they can be prepared.

In conclusion, I have great pleasure in acquainting your Excellency that on this, as upon previous occasions, I have received, in reference to the collection of these statistics, valuable assistance from the magistracy, the clergy of all denominations, and other influential parties, and also from the public press; and as the object of procuring the returns is now so generally known, and former prejudices no longer exist, I have not thought it necessary in the present year to circulate the usual explanatory letters on the subject.

I have the honour to be,
Your Excellency's very faithful servant,
William Donnelly,
Registrar-General.

Agricultural Statistics Office,
5, *Henrietta-street, Dublin, Sept.* 15, 1856.

YIELD OF THE LATE HARVEST.

Pilate enquired "What is truth?" and in this our day we repeat, "What is truth?"—and wait in vain for an answer. Even the word in its right acceptation is perverted, or the minds of the enquirers do not comprehend its meaning. It is obscured; or, if presented at all, is disguised by a mask; and so in our endeavours to distinguish what is real from what is fictitious, we become as much deceived, that at length, like Bishop Berkeley, we begin almost to doubt whether doubting itself is doubting.

In agricultural concerns who is there that believes one-half the statements he hears? Facts, if rendered, are so perverted, that they become the foundation of error. We read, and read, and doubt, until at length with Sterne we are led to exclaim, "all is barren." If anyone hesitates to acknowledge this, let him reflect upon the opinions that have from time to time appeared within the last two months upon the result of the concluding harvest. Contemporaries have told us from the beginning that it was to be the greatest ever known. So determined was it that the crop *should be a great and magnificent one,* that if rain was reported to have fallen, and to have beaten down the corn, "no injury was likely to follow:" if days of successive rain ensued, "the coming sunshine would compensate the effects:" if sprouted, it was "little injured!" Rain and hail, wind and tempest, "howled and split their cheeks in vain" upon the devoted fields: the stable earth was still staggering under their prodigious weight—the latest idea of a cornucopia was of something that was not only full, but running over in profusion on every side!

Others take different courses—answers obtained to queries from almost every county in the kingdom. These, as might be expected, are vaguely expressed, and to some extent undecisive. Still, if readers were left to draw their own conclusions, they would of course comprehend pretty much what was intended to be conveyed. But no; a lengthy commentary appears, by which they are informed that an average now must be taken to mean a full crop; that a full average means a great crop; and that England at that moment contained more bushels of corn than had ever been the case at any antecedent period!

We are not disposed to quarrel with our bread, nor to murmur at the blessings that Heaven has bestowed upon us; but we declaim against such exaggerated statements written for any *purpose,* to serve one interest at the expense of another—tending, indeed, only to mislead and deceive the public, and in the end to lead us to squander when we ought to spare, and to be lavish when we ought to have husbanded.

Who cannot—who does not—regret that such perversion of facts should occur? If cheapness of provisions is the object, it will be best attained by straightforward statements. The predictions upon the crop of 1855, as also published by a contemporary, in the result proved to be totally incorrect. Ten millions of money does not meet the difference of value of the wheat as predicted to be required and that which has been absolutely imported betwixt the preceding and present harvests; and yet this prediction was introduced with all the authority of prophecy, until some were bold enough to contradict it. And so of the harvest just ended: though reported of such a prolific and magnificent character, the very contrary may be the result. From all quarters the yield is admitted to have fallen much below expectation, and throughout widely-extended districts is pronounced to be much under an ordinary average; whilst, as compared with the crop of 1855, it decreases to the extent of from 20 to 25 per cent.

In sober seriousness, then, let us endeavour to ascertain what is really the prospect before us as regards the present crop. The steam thrashing machines have now become the most reliable resources of information, and they already have told a tale far different from those current in cities and commercial coteries.

In all districts where the soil consists of clay, and which are usually denominated wheat-producing soils, the deficiency is greater in proportion as the soil would have been affected by a superabundance of rain at the end of May. Consequently all that description of clay land that produced the greatest crop of wheat in 1855, in 1856 is found producing the smallest, and the yield but barely exceeds a moiety of the crop grown in the preceding year. As land is found more friable, so the yield is found to increase, and upon the lightest and best-drained soils a crop is found but little inferior to that of the preceding year; but from various and extensive inquiries we feel enabled to state unequivocally that the crop will fall considerably below an average one, even taking into account the increased breadth under wheat. Our conclusions are that a much larger quantity will be required this year to meet the deficiency than was found necessary on the crop of 1855; and if we also take into consideration the small quantity on hand, a very considerable portion beyond will be needed to bring up the stock to its usual and necessary amount.

What we now state is not merely conjecture, but results from inquiries made over an extensive portion of the kingdom; neither are we desirous of making it appear worse than is actually the case. Far from it: we feel it our duty as journalists to lay a fair and candid statement before the public, and to expose as far as possible the attempts that have been made from time to time to mislead. The subject is momentous, and requires the most grave consideration. Danger is far more easily met by being apprized of its approach; and it is only by imbibing a false idea of our safety that we fall into the greatest difficulty.

AGRICULTURAL INNOVATIONS.

GRAIN DRYING IN THE BULK.

It is worthy of note that nearly all the speculations which have been offered in connection with the subject now under consideration, have emanated from non-agriculturists—from men of science and from engineers, who having their attention directed to cognate subjects, have been struck with the great advantages which would result from applying the experience gained in other departments to the preservation of the food of man. And it is possible that the apparent supineness of practical agriculturists in this matter arises more from their want of knowledge of what can be done—nay, what has been done—than from any real indifference to the importance of the subject. Perhaps at no stage of the varied labours of the farm, is there such a necessity for the operations being quickly and continuously carried through, than at that of reaping—it admits of no delay. The motto of the harvest-time is, "Now or never;" and every day of adverse weather is so much of a certain loss, either of quantity or quality. The enterprising farmer is fully alive to this—so fully, that he would grudge not a little outlay to insure himself from the contingencies we have alluded to; and it is not that he treats with contempt or indifference such plans as propose to relieve him from anxiety at this most anxious period, but that he fears that to do so is impossible, or at least not practicable at any outlay within his means. Possibly the knowledge of the fact that in certain branches of our manufacture large bodies are raised from a state of complete moisture to that of complete dryness in a very short space of time, and at little cost of outlay or trouble, would lead him to think that a like operation, more or less modified, might be applicable to his peculiar circumstances.

So early as 1741, Dr. Stephen Hales drew attention to a plan of his, for forcing large bodies of air through and amongst grain and corn, for the purpose of keeping them dry and sweet. From what can be gathered historically, this invention appeared to be more particularly applicable to grain in bulk, that is thrashed, and not connected with the straw; it, however, contains the germ of what we feel convinced will some day or other be a regular process in every farmstead conducted on scientific principles. At a much later period another plan, and by a far more practical man, was promulgated, for the purpose of drying grain in the sheaf, or as cut in the field. This was the plan of a "drying house" by Thomas Tredgold, the well-known engineer. We shall hereafter briefly describe the peculiarities of the plan, and, in the meantime, record here what his notions were, about a "system" feasible enough, possessing no practical difficulties to prevent its being carried out, and yet, although produced many years ago, has not, so far as we know, been carried out in one single instance in all Merry England, and is now looked upon by many as "somewhat too absurd" to be seriously talked about. An apparatus to "dry corn in case of wet weather," says Mr. Tredgold, "would not be expensive, and would soon repay for its construction"—an authority who was not a man rashly to hazard an opinion as to any plan of his paying or not paying, neither was his opinion founded upon mere conjecture. He was quite ready at any time, we doubt not, to take the risk of the successful operation of any of his plans. "I have no doubt," he continues, "that in many districts the use of artificial heat will increase, and the loss of much valuable grain will be prevented." The wish was here the father to the thought; nevertheless, although the use of any plan for drying grain—either with "heat" or otherwise—has not yet begun to be tried, we believe with Mr. Tredgold that some plan will henceforth form a part of all farm mechanism, by the use of which "the loss of much valuable grain will be prevented." As it is, the good time is *coming*, we suppose; may its advent be near! "Waste not, want not" is worth remembering by those who sneer at all scientific agriculture, drainage, or what not, and who may yet believe that to neglect drainage is to waste the products which attention to it might have bestowed on them. And the adage may also be remembered by others who, while more enlightened than those we have alluded to, do not sneer at, but gladly avail themselves of the aid of science, still incline to look upon our "system" as rather utopian. Doubtless, although not acknowledged now either by "slow" or "fast" farmers, to allow corn to stand in the field exposed to noxious influences *is* waste, and waste too that may be avoided. But to return to our author. We wonder how long the following considerations will fall on the listless ear, and exert no influence upon the mind of those so truly and deeply interested in the question:—"Besides, with the knowledge that he can save his corn in good condition in a bad season, the farmer will have a mind more at ease; he becomes secure of that which, in the ordinary course, is very frequently most seriously injured, and sometimes altogether lost. He may also turn the same contrivances to advantage in a wet *hay* harvest; and temporary erections will soon be changed for more permanent ones. The certainty of artificial heat will be to the farmer as important as the certainty of power is to the sailor. * * * It is not farmers alone that will be benefited by drying corn artificially in backward and wet seasons; for in such cases the whole population must feel the good effect of this plan. Unsound grain makes very indifferent bread, manage it as you like; and the evil is too frequently a very general one." On this latter point we could cite many authorities of more note, perhaps, in agricultural matters than our author; but it is not here necessary. However much we may differ as to the probability of effecting a good system for saving corn in wet weather, our readers will not differ from us as to the fact that sound dry grain is better than wet. Those of our readers who may be desirous of collecting a few notes on this important branch of agricultural economics will find some matter which may be useful in two articles in parts 44 and 45 of the "Journal of Agriculture" (Blackwoods).

Corn drying, as cut in the field, can be performed in one of two ways—1, by artificial heat; 2, by being exposed, in certain circumstances, to the ordinary currents of the atmosphere. Let us briefly investigate the principles upon which these two methods are conducted, and first as to the place or places in which artificial heat is used.

Before deciding upon the mechanism, or the arrangements by which the application of heat to the grain can be facilitated and controlled, it is necessary to glance at what may be called the "philosophy of drying"; for on a correct appreciation of this can the after arrangements be only carried out so as to act well and economically.

Expose a wetted cloth to the action of heat, as that of a fire or the rays of the sun; clouds of vapour, more or less defined in appearance, will be observed to rise. This, in common language, is called evaporation; the result of which, if long enough continued, is the relieving of the cloth of all moisture, which is termed "drying." Place the cloth wetted in a close vessel, expose this to the same degree of heat as before; after a while, take off the cover of the vessel, which we suppose to be moveable; that moisture has arisen from the cloth is seen at once from the vapour arising, but that it has not left the cloth is also noticeable: it is nearly, if not altogether, as damp as before. Here, then, we see, that to dry—that is, relieve a substance or substances of moisture—two things are necessary, "heat" and "free contact" with the air; heat, to convert the contained moisture into vapour, and air to carry off this vapour. For be it noted that air has a great affinity for moisture, but it can only absorb it while in a state of vapour, this absorption being generally aided by raising the temperature of the air which is to pass between, or in free contact with the substances to be dried. This passing of bodies of air in contact with the wet substances is considered by all authorities of the utmost importance; without it, continuous evaporation cannot be carried on, and without continuous evaporation no drying results. Every volume of air has a capability of absorbing a certain quantity of moisture in the state of vapour; the greater the number of volumes passing in contact with the substance to be dried, the greater the amount of moisture carried off. The rapidity of evaporation is, in fact, dependent upon the quickness with which bodies of air are passed over the evaporating surface. This is familiarly explained by placing ether in the hand, and blowing on it; the more rapid the blast the greater the degree of cold felt, or evaporation; for the former is just the measure of the latter. The same truth is exemplified in the rapidity with which wet pavements dry on a windy day. Direct experiment has shown that from one square foot of water-surface, at a certain temperature, the evaporation was in calm weather 22½ grains per minute; at a brisk breeze, 29; and in a high wind it was increased 13 grains, or 35½. If the schoolboy, or the equally impatient traveller at a railway refreshment-stall, wishes to cool his breakfast draught quickly, that he may hurry off, he blows over the surface, and the result he expects he obtains in the cooling; the measure of the cooling being, in fact, that of the evaporation. Again, laundresses know full well the difference between a "drying day" and one in which the operation is slow and uncertain: if a brisk dry wind is blowing gaily past her extended lines with their snowy burthens, she knows she secures the former; if damp drops from the trees, and there is a stillness in the air, she regrets to find that she has secured the latter.

We have now seen that two things are essential in drying quickly—heat and change of air or ventilation. Indeed, of the two the latter may be said to be the most important. A high degree of heat may be dispensed with, but quick and rapidly-succeeding volumes of air are indispensable. We can dry rapidly in the open air, with very little atmospheric heat, if we have a brisk breeze; but we may have a high temperature and little or no drying, if we have no ventilation. The latter condition is in fact that upon which the well-known "fire-proof safes" depend for their security. A substance is provided in the cavities of the case, which on the application of heat, gives out large volumes of moisture; this permeates through the papers contained in the safe, and makes them, in the first instance, damp. The continued heat causes evaporation to be carried on from the papers, but this being carried on in a close vessel, from which there is no escape, and which is of limited dimensions, it is of small amount; for it is an axiom in this department, that as the space is increased the evaporation is increased in proportion.

We have said that heat is necessary, but the popular notion must be guarded against, that evaporation only takes place when the temperature of the water to be evaporated is above 212°. On the contrary, vapour is evolved from moisture at a temperature many degrees below zero of the Fahrenheit thermometer. Dr. Dalton instituted a series of experiments to ascertain the "force of vapour from water in every temperature, from that of the congelation of mercury at 40° below zero of Fahrenheit, to 325°." When the temperature is below 212°, the process is called "spontaneous evaporation", and is influenced by the amount of moisture already in the air. We see then that "the important process of drying things is merely the placing them under an elevated temperature, if attainable, and in an atmosphere not containing so much of the liquid as to be saturated at the temperature. The effect of wind or motion in quickening evaporation is owing to its removing air saturated with the moisture, and substituting air which is not." Hence arises the importance of using artificial heat when time is an element to be considered; for, as we have seen, by heating air we increase its affinity for moisture under the form of vapour; and, as there is a certain point at which the air will take up no moisture—that is at which it is *saturated* — we increase the amount of absorption by bringing up fresh volumes of *unsaturated* air, and getting rid of those which have taken up their portions of vapour. And in getting rid of these volumes, we bring about another beneficial result in quickening the motion of the passing through current; for the greater the difference between the temperature, between an ascending current and the atmosphere by which it is surrounded, the quicker is its ascent. And we have already noted how the increase of evaporative effect is dependent upon the rapidity of the current passing over the surface. Hence arises the great benefit derivable from forcing air by fanners or otherwise through substances to be dried. But to have the full effect of this absorptive power of air, it must be dry; if, therefore, the external air is damp, to dry economically and quickly it should be allowed to pass into the drying room in small quantities, and at a high temperature.

In drying materials, their condition will decide in a great measure the rate at which they are to be dried. When they are thin and light, of much surface and little thickness or bulk, a quick rate of drying at a high temperature is best. If the surface is comparatively trifling, and the thickness of the material considerable, a slow rate of drying, at a moderate temperature, is advisable. For it is to be remembered that a quick drying will tend only to dry the surface, close up its pores, and be the very means of preventing the interior damp in the mass of the material from escaping, just as by plunging a mass of meat into very hot water we close its pores, and prevent the internal juices from passing into the water; whereas, by bringing the temperature of the water, in which the mass is, gradually up, we open the pores and extract the juices from the whole mass. It is obvious that the more we extend the surface of a material and reduce its mass, the greater facilities do we offer to the heated currents to act upon it, and to quickly dry it. The greater the surface upon which we bring the volumes of air to act, the greater the amount of damp or wet we allow to be taken up by the air. Hence arises the value of the "hay-tedding machine", which spreads out the hay to be acted upon by the sun and atmospheric influences, and increases its evaporative surface. Hence, also, a valuable feature which the "reaping machine," in our opinion, possesses—over and above its facilitating of a very important process—namely, the levelling out or spreading of the cut grain in the form of a shock or thin stratum of straw and ears; but of this more hereafter. We can conceive of a sheaf of corn so tightly tied, that the outer periphery only will be subjected to a drying influence, while the interior will receive none of it; nay further, be much the worse for the operation, as it will be heated and damped at the same time; for a high degree of heat with no drying are quite compatible, and often indeed met with in drying closets where the establishment of a current is neglected.

From these remarks, the following desiderata of a drying apparatus for grain, where artificial heat is used, may be deduced:—(1) A method of heating the air quickly and economically; (2) of regulating and controlling this; (3) the establishment of currents through the material to be dried; (4) the placing of the material so as to be subjected to the heated currents in the way best calculated to remove its moisture effectually.

The first essential demands that the operation be carried on so as to be free from all disturbing influences of the *external* atmosphere. A chamber or house is therefore required. This may be made of a very inexpensive character—a series of posts driven or "screwed" (with Mitchell's Archimedian screw) into the ground, with sheets of asphalted or other felt nailed across them, will answer all the purposes; or a wooden house erected on Mr. Henderson Porter's plan will form a drying house of a more permanent character. But a variety of methods of forming a chamber in some corner of the standing not otherwise occupied, or of constructing one isolated, will suggest themselves fast enough to the thinking farmer, and may all be carried out at so slight an expense as to form no real hindrance to the adoption of the system. Of course it is to be noted that the more complete the house is, the higher will be the results obtained.

The house being erected, the method of heating the air to be supplied to it, is the point next to be considered. On the supposition that a steam engine, portable or fixed, or a "Stanley's" or "Simpson's" steam cooking apparatus, form part of the mechanism of the farm, we consider steam heat as the most eligible for this purpose. Construct a frame somewhat less than the superfices of the floor of the drying chest, so that it can easily be taken out or in; if made to run upon wheels all the better. Make one side of this 12 or 18 inches high, and the other opposite it 6 or 9, so that the sides will slope like a cucumber frame. Bore a series of two or three-inch holes in the ends of this frame, such as that when a series of cast iron, or, what will be better, copper pipes are inserted in these, and of length sufficient to project at least 6 inches beyond the ends, they will all run parallel to the upper edge of the sides of the frame; that is, slope at the same angle from its upper to its lower end. Connect the upper and lower ends of these pipes with a pipe of much larger diameter; provide the lower one with a stop-cock, from which the condensed water can be withdrawn, or steam allowed to pass; and attach to the upper a pipe provided with a moveable joint, which in turn can be attached to the steam pipe leading from the boiler; place the frame on the floor of the drying house, attach the pipe to that from the boiler, the steam entering the upper large pipe or cylinder will flow through all the pipes, and the condensed water from which may be withdrawn as required from the lower. Here we have a certain amount of heated superfices which can be put in action at a very short notice. It is obvious that this plan can be modified in a great variety of ways, according to the taste or notion of the farmer. A different principle of heating may be adopted. Instead of placing the heated surfaces in the interior of the building, they may be independent, and the heated air obtained from them forced into the drying room by furnaces or otherwise. A plan of this species was noticed in this journal of August 18, which will give heated air of a very pure quality. Of this only we remark that, although it seems to have been recently patented, it is by no means a new plan, the writer of this article having some ten years ago introduced it for heating purposes, at least that part of it which is its main feature, the obtaining of the heated air.

Having thus hinted at the way in which the heated air may be obtained, we have now to notice the way in which it is to be controlled and regulated. On the supposition that when the apparatus we have suggested gives—when the pipes are all filled with steam—more than sufficient heating surface, an obvious way of regulating its current will be to have a very simple arrangement of steam cocks, by which the steam can be prevented entering as many of the pipes as desired. Under ordinary circumstances, an addition to this will be required, and the degree of heat controlled by regulating the amount of the air admitted to, and passing from, the interior of the drying house. This will be best done by having apertures made in the lowest part of the walls, so as to lead the air directly beneath the frame in which the heated pipes are fixed. An aperture should be made at the highest part of the roof, and if possible provided with a ventilating cap of some height outside, in order to increase the ascending force of the out-passing current. All the apertures, those for admitting cold, and that for passing off heated air, should be provided with sliding valves. The extent of the opening of these will regulate the degree of heating and the rapidity of the through current. The opening of the upper should always be in proportion to that of the lower valves. We might give rules for the area of these, and the extent to which they should be opened, but all the degree of nicety required in practice will be acquired by a very few trials.

The second and third desiderata being disposed of, we now proceed to glance at the fourth and last—the placing of the materials in the best position to be dried. This will be obviously effected by placing a series of racks or timbers across the drying room at certain heights, on which the corn may be spread out. This, however, although efficient enough for ordinary conditions of corn, is not complete enough for others. The process as here described is not sufficiently under control. We have already pointed out the danger arising from a too sudden and quick heat being applied to it. If the grain could be subjected to a series of continually changing circumstances, in which the least degree of heat could be applied to it when first operated upon, that is when put into the drying room in its dampest condition, and subjected to a gradually increasing heat, the last change giving it the highest degree of heat, the essentials required in a good drying apparatus would be in some measure obtained. In the plan we have already pointed out, the corn placed in the first instance upon the topmost rack is under favourable circumstances, and that on the lower under unfavourable; that is, corn under the same condition of damp are placed under different conditions of drying: both cannot be right, evidently. Again, as the air progresses from rack to rack, it may reach the last or uppermost in an over-saturated condition, and deposit some of its moisture in the corn there placed; and if this always remains there, it will be subjected continuously to this influence. To change the position of the different layers by hand would be a difficult task, if indeed its performance could be intrusted to ordinary farm labourers. To do it by mechanism is by no means a difficult matter; a plan recently patented is ready in our hands, and a description of which may show how the operation may be self-acting. It is the invention of Mr. Henry Saunders, of Staines, and consists of a series of endless aprons or belts of wire cloth, caused to circulate by means of rollers acting as a series of moveable shelves. The rollers carrying the endless aprons are about four inches diameter, and the upper surfaces of the succeeding aprons are caused to move in opposite directions. The upper apron is partly exterior and partly interior of the chamber, there being a suitable opening or openings near the upper part of the chamber for the passage in of the upper surface of the endless apron, and for the passage out of the lower surface of the endless apron. The grass or other crop to be dried is to be continuously and evenly spread by a workman on that part of the upper surface of the endless apron which is exterior of the chamber, which crop, by the continued movement of the endless apron, will be carried into the chamber, and when it arrives within about twenty inches of the back of the chamber, the endless band will descend partly round its end roller, and deposit the grass or other crop spread thereon to the endless apron next below. This is placed as near the end of the chamber as may be, and the motion being in an opposite direction to that above it, the crop is carried along to the end of the chamber, and thence dropped in the apron below, and so on until it is finally delivered at the lower aperture.

R. S. B.

REPORT OF DAIRY COMPETITION ON THE DUMFRIES ESTATE, 1856.

CUMNOCK, Sept. 15, 1856.—The judges appointed by Lord James Stuart and the Committee of Farmers on the Dumfries estate, for awarding the prizes for the best made Ayrshire and imitation Cheddar cheeses, after a careful inspection of 105 different dairies on that very extensive estate, during a period of seven days, awarded the prizes as follows, viz.:—

AYRSHIRE CHEESE.

1. Robert Steel, Merkland, Silver medal.
2. David Wilson, Auchincloigh, S. M.
3. Alexander Arthur, Benstone, S. M.
4. John Murray, Carston, and John Steel, Fardenreoch, Equal, S. M.

Recommended the cheeses in the dairies of the parties undermentioned, as being of superior quality, viz.:—

Mrs. Sloan, Treesmax; John Paterson, Creoch; Hugh Wilson, Auchingilzie; William Arthur, Wellhill; Wm. Gilmour, Pennyfadzeoch; James Weir, Lochhill; Wm. Craig, Loweamuir; John Spence, Corsancon; John Craig, Guelt; James Gilmour, Orchardton; James Richmond, Hill; John M'Kerrow, High Garlaffin; James Wilson, Old Mill; John Brown, Barlosh.

IMITATION CHEDDAR CHEESE.

1. Bryce Martin, Knockterra, S. M.
2. Ivie Campbell, Dalgig, S. M.

And recommended the following individuals as having made cheese of this description of superior excellence, viz.:—

William Guthrie, Knockshinnock; Joseph Whitfield, Garlaff; James Purdie, Whitehill.

Lord James Stuart accompanied the judges throughout the whole of the inspection.

ON THE TRANSFORMATION INTO WHEAT OF A GRASS CALLED ÆGILOPS OVATA.

Our readers will probably remember some experiments having been made on the transformation into wheat, by repeated cultivation, of a grass called by botanists Ægilops ovata, and a native of those countries bordering the Mediterranean which have been considered the original home of the cereals from time immemorial. The experiments were made by M. Fabre, and a translation of his paper respecting them was published in the Journal of the Royal Agricultural Society. We confess that the facts advanced by M. Fabre appeared to us conclusive, and to have been conducted so as to secure, as far as possible, immunity from hybridization, by carrying on the experiments amidst vineyards, at a distance from fields of wheat. It appears, however, that there exists a difference of opinion on this subject among botanists, both in this country and on the continent. In England the majority of them were disposed, we believe, to adopt the non-hybridizing view of the question; while in Germany and in France the opposite opinion appears to have prevailed.

A writer in the columns of a cotemporary lately stated that Dr. Regel, the Director of the Imperial Botanical Garden at St. Petersburg, has recently informed him that having repeated the experiments of M. Fabre, he has satisfied himself that the reported transformation is merely the effect of repeated processes of hybridisation. Dr. Regel, it appears, went directly to the experiment of hybridising the ægilops with the pollen of wheat. He declares the result to have shewn that there is nothing of a gradual transition from one plant into another, but that by hybridisation he obtained from Ægilops ovata a plant exhibiting a much greater affinity to wheat than to ægilops. The plants did not differ, he says, the least from each other: there was nothing like a gradual change.

With respect to the cases stated in M. Fabre's experiments of other transitions, Dr. Regel considers them as giving rise to the following questions: 1. Whether there are in reality any of these transition forms? 2. Whether they have not been produced by the return of the hybrid towards one of its parents? And lastly, Whether they are not to be explained by the repeated fecundation of the hybrid by one of its parents? In expressing himself in favour of the last supposition, he admits however that he has not himself seen the latter transition. He admits also that a hybrid when perennial cannot return to one of its parents by sexual propagation, but contends that it is different with the sexual propagation, where experiments with newly-raised hybrids, fertile even in their pollen, must decide, and can only decide, the question. Dr. Regel further adds, that he has left some specimens of his hybrids between wheat and Ægilops in isolated places, where they may fecundate themselves; while he has fecundated some again with Ægilops, and others with bearded wheat. He then adverts to a theory started by Dr. Lindley, to the effect that Ægilops ovata and Triticum vulgare are extreme forms of one species. This opinion he considers to be disposed of by his hybrid having pollen which is entirely sterile. At the same time, he admits the question to be still open whether this hybrid may not fertilize itself by means of its own pollen.

At the late meeting of the British Association, Professor Henslow read a paper on some experiments which he had made for the purpose of deciding the question. These had so far succeeded in changing the character of Ægilops squamosa as to lead him to conclude that the original statement of M. Fabre that Ægilops ovata was the origin of Triticum sativa was not altogether without foundation. He exhibited specimens in which Ægilops squamosa had undergone considerable change, but he had not yet succeeded in obtaining the characters of Triticum sativa or wheat. For ourselves we confess that, putting aside the questions in physical botany to which this alleged transformation of Ægilops into wheat gives rise, we were disposed to hail the experiments of M. Fabre as offering a solution to a very puzzling question, that of the native country of wheat in a wild state. The fact that Ægilops is indigenous to those countries bordering the Mediterranean, which have from time immemorial been known as the birthplace of wheat and the early scene of the exploits of Ceres, appeared to furnish strong *a priori* evidence in favour of M. Fabre's researches. If wheat is not derived by cultivation from Ægilops, from what other grass is it derived; and if not from any, where is its native country? Who ever saw wheat wild, except when it had escaped from the haunts of man? Who ever saw it, any more than a wild red cabbage, or a cauliflower, or a wild swedish turnip? Wheat must have had some wild original; and if it is not Ægilops, what is it?

THE ORIGIN OF WHEAT.

Sir,—I find by a leader in your paper for this week that the question of the origin of wheat is again started, and likely to afford as good a chase as ever. I might add, as useless and inconclusive; for assuredly the man who undertakes the task is like him who would find the end of the world by sailing due west—at the end of his voyage he would find himself exactly at the point from which he started. This, however, is my own opinion only; but as I have a good deal studied the subject, will you allow me to repeat and strengthen the arguments that have brought me to the conclusion that wheat has existed in its present perfect form from the earliest period of the history of mankind?

Of the practice of husbandry before the Flood we have no particular account, nor of the nature or kind of produce then cultivated; but we learn that of the two sons of Adam one was a "keeper of sheep," the other a "tiller of the ground." From this expressed fact I argue that the seed corn necessary for the sustentation of man was prepared for him by the Creator *in its perfect form*, although the labour required to render it reproductive was entailed upon him as a curse for his disobedience. It is plain from this account, short and simple as it is, that man in his original state was created with the elements of civilization in his manners and habits of life; and that he did not, like the barbarous tribes of Australia and other new countries of the present period, live on the spontaneous productions of the earth alone. And although from the creation of man to the Flood, a period of 1655 years, this is the only mention made of agriculture, I draw from it the conclusion that cereal produce, as the most fitted for the constitution of man, was the subject of cultivation from the first, and *that* in its perfect form.

We next advert to the promise given to Noah when the flood had subsided, that "seed time and harvest" should not cease (Gen. viii., 22.) This proves inferentially that man had previously cultivated the earth in a systematic manner; and we find that, immediately after this promise was given, "Noah began to be an husbandman" (Gen. ix., 20), having probably taken seeds of different kinds of edible plants with him into the ark. Four hundred and fifty years after the Flood, and only *one hundred years* after the death of Noah, Abraham directed his wife to prepare "three measures of fine meal to make cakes upon the hearth" (Gen. xviii., 6) for the strangers who visited him. It is not said that this was wheat-meal, but there is reason to believe that such was the case; for *one hundred and forty years* after, and within *sixty-four years* of the death of Abraham, we find an incidental mention made of "wheat harvest" (Gen. xxx., 14), which affords at least presumptive evidence that wheat then, and previously, constituted the principal food of the patriarchs. Certain it is that they did not confine themselves solely to a pastoral life, but cultivated cereals, as is proved by Joseph's dream of the "sheaves" (Gen. xxxvii., 7), which in all probability were wheat sheaves. In the after-history of that patriarch, we have conclusive evidence of the general cultivation of that grain.

During the seven years of plenty foretold by Joseph in the land of Egypt, "the earth brought forth corn by handfulls" (Gen. xli., 47), "seven ears on one stalk" (ibid, ver. 22). It is not said, certainly, that this was wheat; but its description exactly corresponds with the *Triticum compositum* at present cultivated in that country, and also with the *mummy wheat*, discovered in a sarcophagus in the Egyptian tombs, which had probably lain there for more than 3,000 years, but which when planted vegetated, and has afforded us a new variety of that grain. I have some ears of this now before me, exhibiting the same phenomenon of "seven ears on one stalk." This wheat is made into Colne flour, and the London bakers use it to dust the kneading boards. Thus we have the fact distinctly brought before us, that the wheat of that period possessed features in common—allowing for the changes effected by differences of soil, character, and cultivation—with that of the present day.

After the settlement of the Israelites in Palestine, there is no question of the existence of this cereal as the common food of that people. We read continually of it in the sacred writings in the different periods of their history, and that they were choice in the selection of it; as is proved by the expression of "the finest of the wheat," "wheat of Minneth," &c., &c. I shall, therefore, leave those who are disposed, to follow up the investigation, and they will be able, by consulting the most ancient profane authors, to find a confirmation of the statements of the Scripture on this subject, which I have not time to do on the present occasion.

What, then, are the inferences that I intend to draw from this chain of evidence? First, a confirmation of the fact that wheat has been the common food of man at least ever since the Flood, and that it then possessed the same features and bulk of grain as at present; and, secondly, that the East, which was first inhabited by man, and was the subject of the catastrophe of the Deluge, *was the native country of that cereal*, from whence, when the race became scattered and emigrant, they conveyed it wherever they went; and thus it became circulated, first on the countries bordering the Mediterranean Sea, and from thence extended by the Romans in their conquests to the various countries subjected by them.

Away, then, with the fruitless idea of finding a parent for this universal plant in any of the grasses bearing an affinity to it. Doubtless many of these are cereals, and by cultivation may be raised far above their station in vegetable life, as you may make a lord of a clown or a blacksmith. We know well what cultivation will effect in the most unpromising plants and animals; and, in the floral department, what wonderful transformations are daily produced by it. We know, too, that if cultivation is neglected, these plants will revert to their original condition; but such is not the case with wheat. Some of the finest types of that grain we receive by importation grow spontaneously in the interior of Russia; that is, the ground *is left to seed itself* from the former crop, and is only ploughed-in in the most rude and slovenly manner.

Such is the theory I have adopted of the origin of wheat. I believe it to be one of those natural blessings which were originally bestowed upon man, to enable him, by the use of the powers and faculties he possesses, to avert in some measure the consequences of the curse. The more those powers and faculties are exercised in a right direction, the more will he escape from, ameliorate, or neutralize those evils which encompass him, and the greater will be his enjoyment of the gifts of Providence.

I shall be both curious and glad to know what your pro-Ægilops-ovata advocates have to say on this subject, and how they will attempt to upset my argument.

Yours truly,

AN OLD NORFOLK FARMER.

London, Oct. 10.

THE INCREASING DEMAND FOR SUPERIOR HORSES AT OUR PRINCIPAL FAIRS.

With the approaching doom of the plough, of course we shall have the doom of the horse also. Just as when steam first began drawing stage-coaches it was at once seen that the value of all horseflesh had passed away. We should not want it on the highway, and we could not want it over a country. A good hack or a perfect hunter promised soon to be little better known than the Unicorn, or the fossil monsters which flourished before the Flood. Steam had extinguished the uses of either. "The Line," mercilessly cutting through the cream of the open, must annihilate the chase as well as the road. A brewer, perhaps, might still buy a dray-horse, or nobleman yet keep a race-horse or two. But beyond this all was barren. Either for pleasure or profit, the time for horse-breeding was gone.

It is astonishing, says Sheridan's "Critic," how few people take the trouble to think for themselves; and we are afraid that many too readily adopted this desponding view of the matter, and abandoned the pursuit as an altogether hopeless speculation. It is at any rate very certain that a few years back a good sort of horse was gradually becoming a wonder. You found it more and more difficult to put your hand on him; the reason for this being evident enough. Horses were bred with less care, and probably in less numbers. Strangely enough, however, there was an increasing call for them. The demon steam turned out to be not half so bad as he had been painted. For a clever hack there were as many bidders as ever; while, as for hunting, the best patron a subscription pack ever had was a railway station. More men came out than was ever known before—as neighbour Brown confessed with a sigh. He had given away the old Fidget mare in a huff, when he might have had another good foal or two out of her yet.

The fact is, we Englishmen are a nation of horsemen, and regard him not merely as a beast of burden or draught only. He is the prime minister to our chief pleasures, and, as such, our chief pride and delight. How every one will respond to that sentiment we so well remember in one of those glowing genial addresses which perhaps none other than Allen Ramsome can give:—"Much as I love a steam engine, I love a horse still more!" It is so with us all. As a matter of business, despatch, or convenience, we may like the steam engine; but we like the horse still more; and so long as we have the heart and the means to enjoy ourselves, so long will he flourish amongst us.

This is a settled point now. But, even beyond this, the horse has still his real uses. Although the glories of "The Tally-ho" and "The Defiance" are no more, the harness-horse has a collar put over his head in many a good service. For the omnibus and cab, whose numbers run up to legion, the smart phaeton, the family carriage, or the State Coach, there is ever one unceasing demand. The Peace certainly may have thinned our customers at "regulation prices," but it has opened, or rather revived, a market, that for many a-day yet will be a brisk one. During this autumn Russia alone has taken a number of our best horses at the best prices; while France and other continental Powers have been anything but idle. It is a great mistake to suppose the foreigner now wants nothing but Shorthorns and Southdowns. Let Jonas Webb tempt him with a promising young one, with a taste of Newmarket blood in his veins, and the visitor will soon bite. Or Mr. Booth, of Killerby, name the three figures for the four-year-old with which he took the Hunter prize at Rotherham the other day, and there will be plenty ready to ship him. Of course, one hears occasionally of artificial prices for anything:—a picture, a pipe of wine, an ox, or an ass, or anything else that is well *placed*. But, depend upon it, there is nothing at present in more regular demand than a good-looking, well-bred, and well-reared horse.

And to whom are we to turn for this? To the farmer, of course. How often ere now have we said so! Who else can breed him with the same convenience and advantage — aye, and with the same profit, if he will only care to do so? But then there must be some care. Don't let him cross any weed with any brute that happens to pass by, and then say it is a business that will not pay. Let him only give as much attention to breeding a colt as he would to a sheep or a calf, and he will as surely have his return for it. There are times when the agriculturist may consult the Messrs. Weatherby and Tattersall as profitably as they may have done Messrs. Wetherell and Strafford.

But to the proof. Howden Great Horse Fair is just over; and "the result," says a congenial authority, *The Yorkshireman*, "has been such a show as we have not seen for many years." It seems, then, we are getting some good horses again, and that these came in whole strings to Howden fair. At first sight, according to all the laws of supply and demand, the natural consequence of this strong show must be a fall in the price. Let, however, *The Yorkshireman* proceed: "The breeders began to arrive with their horses on Saturday and Sunday, and on Monday morning business commenced in earnest. First-rate horses were bought as soon as seen, and fetched high prices. Mr. Leeson, of South Cave, sold two colts for £300; a gentleman from Marshland sold a black draught horse for £100; and Mr. Johnson, of Brigham, near Driffield, sold eleven carriage-horses to Mr. Wimbush for prices which averaged considerably above £100 each. Mr. Wimbush bought several other carriage horses at prices nearly as high. Mr. Brown's celebrated Truemould was bought for £150 by Mr. Collins, to go to France; and we heard that £250 was given for another horse to go to Germany. Vast numbers of horses were sent off by road and rail on Monday afternoon; but the arrivals in the evening, both of men and horses, were so large that we believe every inn and every stable were filled to overflowing, whilst on Tuesday evening droves of horses were obliged to leave the town to seek accommodation at a distance. On Tuesday and Wednesday, the supply being larger, and the buyers partly supplied, prices were somewhat lower; but, we understand, £70 to £100 may be quoted for good coach horses. Inferior horses were difficult to sell."

Let us go a little further, and, availing ourselves of a privilege allowed us, take an entry or two from the notebook of a well-known London dealer, Mr. Quartermaine, of Piccadilly. Here are a few recent purchases, made chiefly, indeed, at this very fair, and all young, fresh horses, of course:—A chesnut, £210; bay, £210; bay, £180; dun, £165; chesnut, £135; bay, £130; chesnut, £105; brown, £90; chesnut, £95; brown, £90; brown, £125; chesnut, £140; brown, £70; chesnut, £240; and so on. Again, we may turn to our own report of the late fair at Horncastle, as given a few weeks since:—"Some little idea may be formed of the extent of the transactions here when we state that, on Wednesday morning, something like nineteen horse-boxes left by the special train, each containing three horses, of the average value of from 100 to 150 guineas."

Does the reader gather the very palpable moral of all this? It is simply that, no matter how many there may be, a good horse will always fetch a good price; and, that a bad one is "difficult to sell." Let us go again to *The Yorkshireman*:—"There is little demand at Howden Fair for common horses, but we wish to impress on the minds of breeders in every part of the kingdom that at the Howden September Show they are sure of a customer for anything of a first-class character." And we would wish to impress this, too. Not only at Howden or Horncastle, but anywhere else, even on your own homestead, if you have a good sort of horse he is sure to sell. If you don't take him to market, a commissioner is sure to come for him, sooner or later.

In this age of improvement the farmer is to have nothing but herds of cattle, flocks of sheep, and sheds of machinery, all of "a first-class character." And why not have his horses of the same stamp? Has he not the same facilities for breeding a good horse that he has for a good ox? Has he not the same opportunity for breeding him to a profit? We maintain he has. Beyond the pleasure afforded any Englishman in rearing and "making" a horse, a return for it is practical. Howden Fair, the Emperor of Russia, Napoleon the Third, Mr. Quartermaine, and Mr. Collins, are evidence to the fact.

One word more. Henceforth let the Royal Agricultural Society of England acknowledge this fact as becomingly as they should do. Let us no longer be sent begging to Local Committees to provide one of the chief features of the prize list. But, let the show of horses be as thoroughly identified with the Shows of a National Society as it ought, and—as it must be.

HOW TO PROCURE AND PRESERVE PURE BREEDS OF CATTLE.—At the meeting of the Enniscorthy Union Agricultural Society, Dr. Cranfield, returning thanks as a successful competitor, said:—"He had not been altogether so successful as he could wish for; Mr. Leigh had beaten him in one instance. He believed it was pretty well understood that the bulls the society had were pretty good, and that there were pretty good dairy cows reared from them; but he believed they were not yet quite so successful in rearing first-class bulls. In England there are many inferior horses, and in Ireland there are many inferior bulls; but it was his opinion if they put a pure sire to a pure dam, they would surely have a pure animal, and a first-rate one. Some persons seemed not to lay so much stress on the purity of blood, and relied more on points; but he would maintain that by putting a half-bred to impure blood they never could expect a pure animal. They might be told that the Durham ox was the offspring of a common cow, that he was only half-bred; but that Durham ox was never a sire himself, and he fully believed that there were great and serious doubts about the real quality of his dam. It was his own full conviction that a pure sire was the surest source from whence to obtain a pure and profitable breed, and there were many pure-bred cows now in the country; and therefore he would say it was not altogether necessary for them to go to Dublin, or to other places, for the purpose of obtaining a pure breed. Besides simple pure blood there were many other qualities, certainly, to be considered. Let them get a dam well-shaped, clean, and fair-limbed, and then get a pure-blood sire, and there could be little doubt of a good offspring. He found that large sums were paid for sires; that the spirit of the county was aroused to take its place among others in the onward way of improvement, and he was happy to encourage it."—The Chairman (John Maher, Esq., D.L.) said: "He believed it was equally well-known and admitted, that the male animal should be pure bred. Go, then, he would say to the breeders desirous of advancing, go to 'Coates's Herd Book'—or as they on the turf said, to the stud book; and before they purchased an animal, or when they had selected one, see they were sure of the pedigree of the animal of their selection. Go to that authority, and, fortified by that, they might expect what would be good: for they would be drawing from a stock which had established such a character, an everlasting one, not long ago in Paris. That was his advice; but he felt it was a different thing so far as regarded that society where they were to be guided by the rules of the society, as originally made.

PROGRESS.

The late Mr. Pusey, in reviewing the progress of agricultural knowledge, gave it as his opinion, that "to suppose science, especially chemistry, was to guide and direct practical farming by conclusions formed on chemical grounds beforehand, was a mistake; and that the safest guide for improvement was to be obtained from the experience of our best farmers." Such counsel at that period (five years ago) we might justly consider as pertinent, and at the present time the repetition of it can scarcely be now out of place.

Not that we are in imminent danger of engaging in costly experiments at the suggestions or teachings of exclusive chemistry; for since the explosion of the famous "mineral theory," we are little apt to put implicit trust in mere chemical demonstrations, until at least their dubiousness be in some measure dispelled by the existing lights of practice, or their general bearing prove somewhat analogous to the same standard of comparison. But that we are open to the charge of remissness in our attention to matters which ought to govern us in the detail and management of our "common things," our every-day affairs, and that a little practical research and observation would put us in possession of invaluable knowledge, is, I think, quite capable of proof. That in many branches of agricultural practice progress has been made, we readily admit; but on a variety of common matters great contrariety of opinion and *vice-versa* methods of managing exist, and the mere existence of contention on such affairs seems to prove that in this direction, at least, our real progress has neither been so rapid, nor so definite, as the loud declamations of a class of orators would have us believe. Had it been so, questions *which are would not* have been open, and practices now enveloped in the mists of "glorious uncertainty" would have stood out clear in the bold relief of fact, and all would have been by the test of accurate experiment established on a broad and reliable foundation. And as years rolled, an accumulation of such recorded experimental facts would have been to the farmer as a vocabulary of living truths, which, in cases of uncertainty or ignorance, he could have referred to, and with confidence relied on; and (to borrow from a popular orator and author), every new fact so brought and recorded he might hail as "another milestone reached in the path of progress."

We could select many apposite matters in illustration of the truth of the foregoing remarks, but, not to be verbose, we will restrict ourselves to one or two only; and the first subject we would call attention to, is the state of our practice and knowledge of sowing grain. With our boasted progress, we certainly might expect that a matter of such evident importance would, both as to the proper quantity required per acre, and also the most economical mode of depositing, have been definitely settled on reliable foundation. But that the greatest dissimilarity both of opinion and practice exists, we have only to quote the daily writings of our would-be authorities to prove. And, first, we have one advising to sow thin, for the "yield is most prolific when growing grain has plenty of ventilation." We have Mr. Mechi both in practice and precept advocating thin seeding;—he says, the richer your soil the thinner you ought to sow; and, if we are truly informed, 1½ bushel of wheat is the maximum he allows to an acre. On the other hand, "A Voice from the North" proclaims that "thin sowing has there been exploded long ago, and that where your soil is fertile and your crops likely to lodge, there sow thick; the plants come finer and tougher, and being thick on the ground, one supports another." Again we find, after a course of experiments on the farm of Mr. Coke, at Holkham, "that four bushels of wheat per acre was, under general circumstances, considered to be best;" though he occasionally deviated from it by sowing half a bushel more or half a bushel less, according to the state of the land, season, &c., &c. In one instance, he had a field sown in part with four bushels per acre, and the other part with five bushels; and when subsequently viewed by many practical men, they gave a decided opinion that the five-bushel-per-acre seeding was the best crop in the field. In our own practice we should in almost any circumstance have considered it, if we had sown 5 bushels of wheat per acre, a clear waste, in the first place, of 2½ bushels of seed; and we should be very chary in risking Mr. Mechi's one and a-half bushel per acre; and then only in cases where we had a clean summer fallow, dry land, and early seed time. We have always fancied two bushels as a fair seeding; though in the case of spring wheat, with an advanced season, we would prefer a peck or two more per acre. In Scotland they allow from two to three bushels of wheat; and we learn from their statistical table, recently published, that the land under wheat is 261,842 acres. Now, supposing the advocates for thin sowing are in the right, and the Scotch farmers wrong, and that 1½ bushel is the best seeding per acre, and that, as a consequence, when 2½ or 3 bushels are sown, 1 or 1½ bushels per acre are wasted—supposing all this to be correct, it must follow that a waste of seed arising from a want of knowledge in Scotland alone amounts to 200,000 bushels. We could go on, but we need pursue the subject no further: we have adduced enough to show that our real knowledge on the matter is confined within very narrow limits, and comparatively our progress has been little. To enable us to get somewhat near the truth, we want a series of experiments, well defined, impartially and carefully carried out, to be carried on in different parts of the country for two or three consecutive years, including in each experiment a rich and poor soil, thick, thin, and medium seedings, and varied in as many different ways as might be thought desirable to throw all the light possible on the subject. That we are not now in possession of positive facts derived from such or a similar source, I take as an indication that on this rather important item our practical knowledge bears little of the impress of real progress.

Again, have we any reliable data to support our assumed knowledge of the value of our different breeds of cattle? Have we any really tangible ground on which we build the assumption that in the bovine race of animals the short-horn, above all other breeds of cattle, to the farmer is most valuable, ought to stand pre-eminent, and must be classed A 1?

We believe that in relation to this breed of cattle many erroneous opinions are current; one very generally so is, that, taken as a class, they are deficient in milking qualities. This we hold to be devoid of any well-authenticated foundation. It is a matter far from difficult to train a cow to give little milk, and this is an obvious part of the secret of successful (for the show-yard) short-horn breeding. For a cow to give a large quantity of rich milk, and at the same time to maintain the obese condition necessary for successful competition, are matters irreconcileable. Hence the fashion with breeders to have a "nurse" or two, calving about the same time as their intended competing animals, to suckle their offspring, and afford means to dry them with the least possible delay. We knew a gentleman who kept a herd of twenty short-horn cows, whose descent was as pure and unspotted as any the kingdom now holds, a great number of the younger cows by one of Bates's Dukes of Northumberland; but this gentleman was not wont to pander his own decided convictions to popular errors, and his cattle were never in an overfed condition, but treated as the laws of nature dictated. His cows were milked out clean, and at regular intervals, and had a sufficiency of food to maintain them in a thriving, healthy state, and many of them gave from four to six gallons of milk daily. But here again the non-existence of recorded experiment between the short-horn and any other famed milk-secreting breed leaves us to doubt, though we well believe that, should ever they be tested with a given number of cows taken collectively from any other favourite breed, their inferiority as milk-givers would not be so fully established as present current opinion would lead us to believe. But the chiefly-acknowledged and most-to-be-desired characteristics of the breed are, their supposed early arrival at maturity, and a natural predisposition to accumulate fat from a tender age. These are truly valuable features; but whether naturally inherent in the breed, or brought about by artificial means, we are neither prepared to affirm nor deny. No doubt but in our show-yards we see yearlings ripe for the butcher, and at two years old in that state of obesity which physiologists tell us is bordering on disease. But we have also seen a Kyloe calf fat at twelve weeks old; and though we admit the possibility of having a short-horn prime for the butcher at fifteen or eighteen months, is there any proof that an animal of another breed kept on the same provender would not also attain the same condition? Have we any direct evidence that another animal, from the same amount of nutritious food, would not assimilate more, or at least an equal weight of flesh? We opine there is no such positive proof on record. Our own predilections may be in favour of the short-horn, yet we confess in their supposed superior grazing qualities our faith of late has been a little staggered. We have for more than one season seen short-horns and Scots Kyloes grazing in one field, age and condition being nearly at par at starting, and the first fit for market were not the "flesh-assimilating" short-horns, but the Kyloes.

We know a practical instance, bearing nearly on the point, of a gentleman who for several years was a successful breeder (for competition) of short-horns, and himself a crack judge of the breed, and whose services in that capacity are often had in requisition, but who sold his herd, and is now, for the purpose of fattening on his farm, crossing—and we understand much to his satisfaction—with the polled Angus or Galloway. Now, unless this gentleman's practice belie his opinion, he evidently considers some other breed than the short-horn better adapted for the profitable production of fat. But this may be mere individual caprice. True, it may; but can any reliable authority be cited to prove that it is? Had the results of a train of experiments commencing with the births of a number of animals of pure and cross breeds, the amount and cost of food by each consumed, their progressive values with progressive years, and ultimate value at a certain age—had such been carefully made and duly recorded, we should now have been in a position to applaud the judgment or deplore the folly of paying 5, 6, 10, or 12 hundred guineas for an over-fed short-horn bull. At the same time, we do not wish to be understood for a moment as traducing the estimable qualities of the short-horn. We regard the breed with a favourable eye; but what we want is to be shown a practical proof of their decided superiority. If that can be done, well and good; if not, their present extraordinarily high prices are only another proof that man is eminently a "gullible" animal. And again we repeat that nothing so likely as experiment would bring out the truths of the matter, and in the long run (to use a rather homely phrase) would hardly fail to give us the "right sow by the ear." And what, we ask, would be more in consonance with the self-imposed duties of the Royal Agricultural Society than the instituting and carrying on experiments tending to establish on firm grounds matters hitherto deemed doubtful, and which in time would be of such immense advantage to the farmer? It would indeed then blend "Practice with science," and impart to husbandry in detail the stamp of indelible certainty. Our progress then, if slow, would at least be sure; and although to "hail a milestone in its path" required a vast amount of perseverance, yet the fact would be consoling that we had not arrived there by taking things for granted—that we had not formed our conclusions "at a jump"—but that we had stridden on with laborious precision, and at every step confirming our present practice or exposing its fallacies, denuding our most favourite theories of all supposititious matter, and exhibiting facts as they really are (however much at variance with present practice) in the broad light of day. We could enumerate many more matters on which both the opinions and practice of eminent agriculturists are at variance, but space forbids to detail. The two subjects selected are replete with matter for illustrating the truth that our progress is not in keeping with the vaunted bluster we weekly peruse; and the real truth of the matter is, that for many years, on many important (to the farmer) matters, our real progress has been not appreciable. WM. J. M.

Yorkshire, Oct. 11.

WALTHAM AGRICULTURAL ASSOCIATION.

The annual meeting of this association was held on Wednesday, Oct. 15, at the Agricultural Hall, Waltham. The show of stock and poultry was the best that has been witnessed since the formation of the society.

The prize of thirty guineas, given by the Duke of Rutland for the best cultivated clay-land farm, was carried off by Mr. Stephen Wilders, of Redmile; and the silver cup for the best ploughing by a farmer's son, to Mr. Thomas Jackson, of Sproxton.

In the evening a large assembly, composed of gentry and farmers, dined together in the Agricultural Hall; but very considerable disappointment was experienced at the last moment by the intelligence that the Marquis of Granby was unable to be present from the cause mentioned below. In his absence, the chair was taken by Mr. Norton, of Elton, an influential magistrate, and one of the oldest members of the association. Amongst the general company were Messrs. Chowler, Norman, Hubiston, Green, and the Rev. Mr. Stanley, and various other gentlemen of influence.

The usual loyal toasts having been drunk,

The CHAIRMAN proceeded to propose "Success to the Waltham Agricultural Association." When he recollected the able manner in which this toast had always been given by the noble duke, the interest with which he invested it, and the important details with which he accompanied it, or when he remembered the splendid way in which the noble marquis had invariably addressed them while proposing it, he confessed he felt some reluctance in attempting to follow in their footsteps. If, then, he did not propose it with the same ability, furnish them with the same details or useful information which had hitherto accompanied it, he was sure their indulgence would pardon his deficiency, being well assured that there was nothing he had more at heart than the welfare of the society. He was deeply gratified to see so excellent an attendance within the hall that day, because it proved that they were determined to follow up the views with which the society was established—namely, keeping up that spirit of competition among themselves and giving that encouragement to their labourers which had ever been fraught with such admirable results. In the first place, therefore, he would congratulate them upon having had one of the best exhibitions of stock that had ever been shown there since the society had been established. That showed that they were steadily advancing, for very few societies of their kind could keep up with them, either in the excellence of the produce or stock, or could show a better system of farming. For that they were indebted to the care with which the Duke of Rutland had fostered the society, and the munificent prizes offered by him for the best cultivated farm. That was one of the great features which rendered this society so valuable, because such prizes induced a general competition among the farmers themselves, which had been found to be productive of the greatest advantages. This association now extended over no less than 113 townships, and included some hundreds of members. Its moral action was therefore very great; and it was not too much to say that the measures adopted, either individually by the members or collectively by the association to advance the interests of agriculture, and especially to improve the cultivation of the land, had a great effect, not only in the district in which it was situated, but in the country at large. In all they gave 122 premiums for the encouragement of agriculture, and up to the present time the result of its operations had been highly advantageous. They had shown to the whole of England that they were prepared, not to follow, but to take the lead in this good work He was glad to see the introduction of a good system of deep draining into this district, and of hardly less importance, he thought, was the erection of good farm buildings. The state of the law no longer excused the farmers from raising good outbuildings, and he was sure that they would greatly gain if they did. Formerly, under the common law, every building raised upon the land reverted to the owner on the expiration of the lease, but that defect had been remedied, and therein the legislature had been of the greatest assistance to the agriculturist, because by the 14th and 15th Victoria, it was provided that if any tenant of land should, after the passing of the act, erect, with the consent of the landlord, and at his own cost, any farm building, either detached or otherwise, and put up any machinery, either for agricultural purposes alone, or for purposes of trade and agriculture combined, such buildings should be the property of the tenant and removable, providing they were not originally erected in pursuance of some compact previously existing with the landlord. The next point upon which he would touch was one which was at present very much occupying the attention of the farmers all over the country, and upon which there was great difference of opinion, he meant of course agricultural statistics. Now, while upon that point it might be worth while to inquire what had been the effect of taking the corn averages, and whether any advantage had accrued to the farmers from their publication. As they all knew, the corn averages were originally ordered to be taken for a purpose very different to that of affording information to the farmers, namely, in order to fix the duty on the sliding-scale in 1842; and it was a little singular that the law for fixing the averages had remained upon the statute-book after the repeal of the duty itself. Still, if they could incidentally derive any information from it, it was a fortunate circumstance that it remained in existence. He knew very well that the corn averages rather told the tale of the quantity in each market from week to week than the expectations of what there would be; but, in connexion with agricultural statistics, it might afford some clue as to the advantage to be gained from an estimate of the crops, and thus guide the farmers in their course of operations, and, taken in conjunction with other circumstances, lead them either to oppose or support the measure, which they might be sure would be brought in by the government next session. By reading the reports in the newspapers they must be well aware that this subject had formed the principal topic of discussion at the various agricultural meetings, and perhaps the clearest exposition of the recent measure and the machinery proposed to be adopted for the collection of agricultural statistics had been given by Sir E. B. Lytton, at Hitchen, in which he had pointed out the evil that would arise from allowing the machinery of the poor-law commission to be used. At best the commissioners could get them but imperfectly; and therefore it was that they sought a compulsory measure, which, he agreed with Mr. A. Stafford, who spoke upon the question at Northampton, would be very undesirable. Lord Stanley, who had devoted much attention to the subject, was probably right when he expressed his opinion that any measure, to be effectual, must be one that would not irritate the farmers; for they would find it impossible to obtain information by a system of coercion, which was only given through fear, and which, therefore, would never be sufficiently complete for any useful purpose. The opinion of the various authorities he had quoted seemed to be in favour of collecting the information; but they all agreed that the machinery must be neither inquisitorial nor vexatious to the farmer. He himself thought that if it could be afforded them in a manner agreeable to the view of the agriculturists, the knowledge that there was a certain quantity of corn grown in the country at a particular season, and therefore a certain amount of capital existing, must be useful to the occupier of land. Many people had stronger apprehensions against the measure than were perhaps necessary on the one hand, while on the other, he thought that the advocates for the collection of agricultural statistics expected rather too much from them. Because, calculate what they might with regard to the breadth of land in the country sown with the different crops, they could not calculate the seasons—they could not tell whether they would have an early spring or a late harvest, and above all, they could not tell what the manufacturers of England, who formed the millions of the country, would consume. They must remember a fact which there was too much fear was being kept in the background, that upon the position of the manufacturers depended, to a great extent, the consumption of corn in England. If employment was plentiful, and wages good, the consumption by the working classes would be great; but if, on the contrary, wages were low and trade bad, nothing like the quantity would be consumed. Those were points with respect to which agricultural statistics would give them no information whatever. The truth was, that by having these statistics they would be able to give a better guess at the quantity of produce in the country; but, after all, it would be but a guess. The really great point to which they ought to turn their attention was the bringing of the land, which was now heath and moor, into cultivation as far as it was practicable. The prospects of agriculture were everywhere good at present, which of itself spoke in favour of the numerous improvements. But, with all that had been done, much still remained. It was calculated that there are about 77,000,000 acres of land in the British Isles, three-fifths of which, it was calculated, were now under cultivation. Of the remaining two-fifths one must ever continue waste in rock, quarry, heath, or headland; but by the advance of agriculture and spirit of enterprise the other could be improved and brought from a state of sterility to yield, if not in abundance, at least sufficiently to reward the cultivator, and materially increase the aggregate produce of the nation. They could easily imagine what would result from the bringing 15,000,000 of acres into cultivation; nor was he to be met by the reply that the capital which would be exhausted would prove too great a strain upon the energies of the country. When he saw nearly £300,000,000 invested within the last forty years in railways, the return from which was not extremely profitable; and when he considered that the investment of £100,000,000 would be sufficient—as had been proved by calculation—to bring all the sterile land which it was possible to reclaim into cultivation, he thought it would be obvious to them all that the wealth of the country would be so materially increased, that an ample return would be made for the capital invested. The observations he had made on this point were based upon official documents to a great extent, and it was therefore no mere visionary scheme of his own. At all events, these were subjects with which the agriculturists of the kingdom might well occupy their minds; for no one could doubt that the interest of agriculture was the interest of the country, and it was the bounden duty of all, and especially of those connected with the land, to advance it.

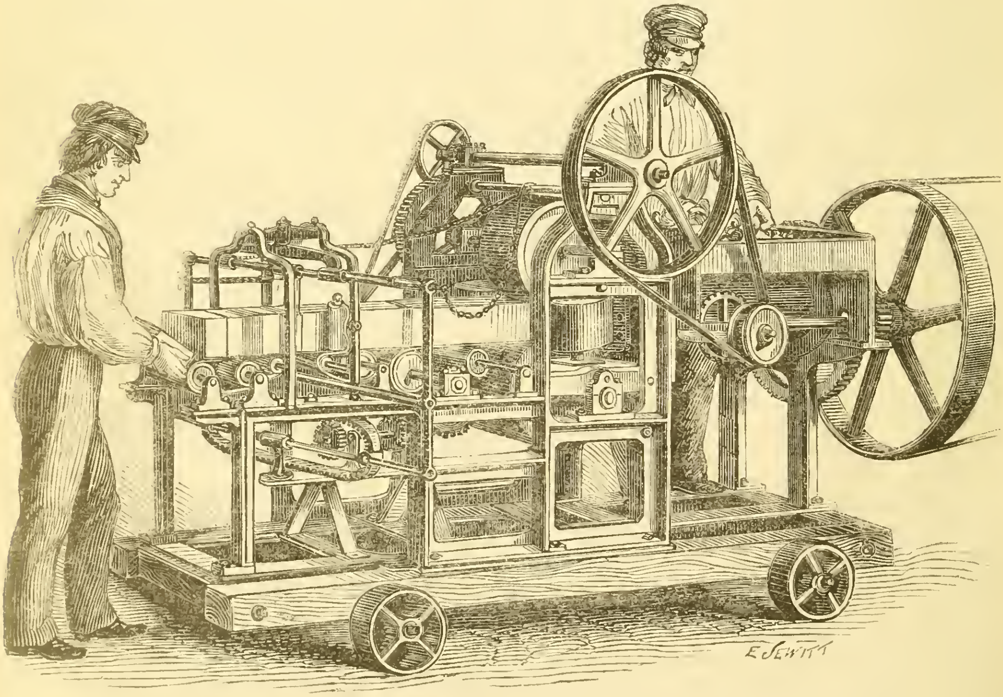
"The health of Mr. Chowler" was drunk in connection with the toast.

Mr. CHOWLER, on rising to respond, was received with cheers. In the course of his observations he said that he was aware that nothing was so important to the country as the efficient and successful cultivation of its soil, and therefore such noblemen as the Duke of Rutland deserved the highest praise for the encouragement he afforded to agriculture, and especially for introducing the element of competition in cultivating farms. He possessed some knowledge of the country, and he could fairly say, after walking ten miles in a straight line over the estate of the noble duke, the effect of that competition had been, that the farming of the land upon it was an example to the country. In every respect, both with regard to the application of manure, its quantity and quality, and the absence of weeds, it might successfully challenge competition with any other district. And here he would venture to say that, with the present remunerative prices, and the increase of produce, the owners of property had a right to expect a visible improvement in the farms. What had been the result in this instance? Why, that the whole district, far beyond the limits of the estate, had been influenced, and the cause of agriculture promoted by the exertions of the tenants and the success which had attended their endeavours to increase the quantity and quality of their produce. One thing especially was important to be noticed, namely, that it was by no means necessary to adopt stringent agreements in order to secure good farming, for none of the farmers, either in Leicestershire or Lincolnshire, where the best farming had met his view, had any agreement with their landlords. He quite admitted that in some parts of the country it was necessary that the farmers should have a stimulus, in order to get the land into good condition. But that was not required here. It was quite true that a large quantity of land was not yet under cultivation, but it imported them more to know that much which was capable of producing much more than it did at present was not yet cultivated to its proper extent; and he made that observation publicly, trusting that they would see better things yet, and that there would shortly be a visible improvement in certain places which it would be unnecessary to particularise with greater exactness. The show that day had been extremely good, both in quantity and quality; but in one particular he thought the principles of the society were a little too contracted. He observed that by one of their rules all animals shown were required to be bred in the district. That was something like introducing a principle of restricted competition, which he should be glad to see done away with. As he said before, prices were now remunerative, and he hoped that they would continue so. He hoped from the bottom of his heart that the manufacturers, who were the best customers of the farmer, would continue to enjoy the prosperity which they were now blessed with. Although they might appear to purchase a portion of their food at relatively high prices, he trusted that they would not feel the pressure, but that the producer and the consumer would both continue to advance in peace, comfort, and prosperity together.

Several other toasts of a local character followed, and the meeting did not separate till a late hour.

CHAMBERLAIN'S BRICK-MAKING MACHINE.

At the annual meeting of the Society of Arts, held on the 25th of June last, it awarded to Mr. Chamberlain its silver medal for two papers read before it; the one "On the manufacture of bricks by machinery," and the other "On the drying and burning of bricks." Mr. Chamberlain has thus made himself familiar with both these processes, and one of the results of his labours is the brick-making machine we now propose noticing, along with the accompanying illustration, as exhibited at Chelmsford. About twelve months ago it was exhibited for the first time at the Liverpool and Manchester Agricultural Society's show at St. Helen's, when it was awarded a silver medal. At that trial it "made thirty-five bricks per minute." At Coleshill, Leek, and Worcester it was equally successful, gaining prizes and medals at the Warwickshire, Staffordshire, and Worcestershire agricultural shows. At Chelmsford it was less fortunate, having to compete with Clayton's, from which it copies, under licence, one of its principal parts—the feeding of the moulding rollers in front, with a stream of clay issuing from a die*; but this does not detract from its usefulness in the brickyard.



The illustration above is a perspective view, showing two attendants making common bricks; the one on the right feeding the pug-mill, and the other on the left receiving the bricks on pallet-boards for removal to the

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* It is but justice to both Mr. Chamberlain and Mr. Clayton, to say that the former, as soon as he knew that he had infringed the latter's patent, applied to him for a license, and that the latter at once responded to this request.

"walling yard." The machine is portable, with open framing, of the rectangular standard kind, borne on four small wheels, and is driven by means of a strap from an engine, as seen on the right.

The different parts we have to notice are these:—1. The pug-mill; 2, The die; 3, Moulding rollers; and 4, Compensating wire cutting apparatus.

The pug-mill is a horizontal one, fed from above through a small aperture. The clay is amalgamated and tempered by means of screw-bladed knives, which gradually work it forward, forcing it through the die.

The mouthpiece or die is about half-an-inch deeper and half an inch broader than the stream of clay after it passes through the moulding rollers to the cutting apparatus, with the corners rounded off to about the quarter of a three-inch circle. The object of this is that the clay will pass more freely through an aperture of this form than through one with right angles; the one-half-inch deeper and broader permitting the moulding rollers to bring up the stream of clay to a proper angular form.

The moulding rollers are four in number: two horizontal—one above and another below—and two vertical, one at each side. As soon as the clay passes through the die, it is seized and rolled by them into the proper form of a brick edgeways in depth and lengthways in breadth. They are covered with fustian, and compress the clay into a beautifully smooth and rectangular volume for the cutting apparatus.

The cutting apparatus is a very ingenious contrivance for cutting the volume of clay into properly-shaped bricks while in motion. This is effected by means of the wire cutting at a compensating angle and moving with a transverse velocity corresponding to the longitudinal velocity of the volume of clay forwards. The two sides of the frame to which the cutting wire is fixed have both a rotary and rectilinear motion—the former by two arms, each turning on a central pivot, the one as seen above and the other below; and the latter by the frame sliding in the two extremes of each of those arms —the arms holding the frame at a proper angle, and the wire cutting the clay into bricks as the frame slides across from left to right, or right to left of the attendant removing them, as the case may be. As soon as one brick is cut-off, for example, the arms turn on their pivots, placing the frame in the proper angle for the wire cutting the clay in crossing to the opposite side, and so on alternately from side to side. Motion is communicated to this frame by gearing from the moulding rollers, as will be seen underneath in the engraving.

From the brief description which we have thus given of this machine, our readers will perceive that it is self-acting—the rough clay being fed at the one end, and the manufactured bricks removed from the other by the two attendants, a third attendant being required to wheel the bricks to the walling-yard, where they can at once be built six-bricks in height from the dryness at which the clay can be wrought. These are great triumphs in the brick-yard—triumphs which we have no doubt will be duly appreciated by a discerning public.

MR. RAYMOND BARKER.

Sir,—As most men of farming celebrity have come under the notice of your readers, permit me to inform them there is one gentleman who is continually before the public as a representative of the farming interest, a member of the Royal Agricultural Society of England, punctual in his attendance at their weekly and monthly councils, and certainly one who must for a long time have given general satisfaction, inasmuch as he presides over the financial department of this important body.

Mr. T. R. Barker, as a practical farmer, I am inclined to think, in many respects, has not his equal in industry, occupying three farms, over 400 acres, under three different landlords: all arable land, and mostly hilly, without the aid of a steward or bailiff.

Digressing a little from my farming story, besides the duties alluded to, Mr. Barker officiates at two meetings of magistrates—one in Bucks, another in Oxon; occupying the chair at the former. He further takes an active part at the meeting of the Commissioners of the Thames Navigation; assists in the management of the Henley Savings' Bank; is chairman of two Bible Societies, and of the local Horticultural Show. In his own parish, he assists in the management of a Property Protection Association, and attends parochial meetings as frequently as any one of the parishioners.

All this, to those initiated in public life, and while young, may not appear very much; but when I say that Mr. Barker is nearly eighty years of age, it will appear to your readers almost incredible; but it is, nevertheless, perfectly correct; while I am inclined to think that I have omitted many other self-imposed duties.

Before the Poor Law Bill came into operation, Mr. T. R. Barker was the standing overseer for the parish in which he lives—Hambleden, an area of nearly 7,000 acres; without assistance he collected the rates, distributed them to the paupers and kept the accounts up to the time of the formation of unions.

To return to the farm. It would be impossible for me to give more in this space than the outline of the system pursued by this venerable gentleman. But I am sure, if any farmer would wish to take a leaf from his book, Mr. Barker would render him every facility. Although Mr. Mechi's little farm has attracted so much attention, and so many to witness novel modes of operating on the land, I am quite sure that practical or amateur farmers would receive a very instructive lesson from the management of Mr. Barker's land. A great many sheep are bred on the place (none besides the tups are purchased); and all, at some age, both ewe and wether, are made fit for the shambles. Messrs. Ellman and Webb, indeed all breeders of the Southdown sheep, have all something to learn, and I am sure they would feel deeply interested by an inspection of this flock.

It has been generally thought that a man could not farm badly where a good deal of stock is kept on the land, with green crops, with a great deal of artificial or bought food. This plan has been pursued largely by Mr. Barker; so that the crops standing, or the long rows of stacks that will be seen after harvest, will be the best index as to how such a system may be made an example for the locality, or other more distant neighbourhoods to imitate.

The ride from the Twyford station, on the Great Western Railway, to the farm at Hambleden, about ten miles, over one of the most picturesque neighbourhoods in England, will repay a visit either from the amateur farmer or the industrious working-man after harvest is completed. He will see enough to prove how excellent a method is pursued to develope the resources of the land we live on.

T. Strong,

High Wycombe.

THE POTATO.

Having harvested the bulk of our cereal crops, it may not be inappropriate to bestow a passing glance on that root crop which for a long period formed the mainstay of the chief of the population of Ireland, and comes in largely as an accessory esculent in England. It is especially satisfactory to find that, notwithstanding the usual reports of rot and disease which are said to be prevalent as the tubers ripen and the period for digging approaches, there is nothing radically wrong as yet in the potato crop, taken as a whole, this year. In no other country does this root command so great an interest; nor is the potato cultivated so carefully, so extensively, or so successfully, as in Great Britain. Without making it the most important reliable staple of the country, as was really the case in Ireland for a long period, it is unquestionably the most valuable vegetable for the table, an excellent food for stock, and a truly useful manufacturing article.

While by increased industry, perseverance, skill, and capital, the general resources and grain crops of Ireland have been largely developed of late, potato cultivation has not been neglected. The extent of land under culture with this crop in Ireland has increased from 718,608 acres in 1849, to 981,529 acres in 1855. Of the recent comparative yield we have not the data before us, but it has certainly fallen off largely in comparison with former years. In 1847 the produce per acre was 57·7 barrels of 20 stones; in 1848, 31 barrels; in 1849, 44·7 barrels; in 1850, 36·6 barrels. Scotland, on the other hand, is by no means a potato-growing country, and has not one-seventh of the extent of land under culture with this root that will be found in Ireland.

It was estimated by a correspondent in our columns, a short time ago, that there were about two millions and a-quarter of acres under culture with potatoes in the United Kingdom; and if these averaged as much as 5 tons to the acre, this would give 11,250,000 tons of potatoes as the entire annual produce. In the three years ending with 1849 the annual growth was 9,000,000 tons. Taking the value of the eleven millions and a-quarter of tons at £3 per ton, this would amount to £33,750,000. But besides this large amount of home produce, we import some considerable quantity, particularly early-grown, from the continent; these foreign imports, however, have shown a rapid decrease of late years.

The following figures give the annual quantities and official value of our potato imports. The latter, computed at an obsolete standard of price, is, however, just three times the actual value of the roots, being calculated at about 9s. the cwt., instead of 3s.! This false computation of the value of articles imported and exported is being remedied to some extent by the care of Mr. Fonblanque, of the Statistical Department of the Board of Trade, and the Commissioners of Customs now compute the real value from market prices.

IMPORTS OF POTATOES, AND THEIR OFFICIAL VALUE, IN THE LAST SIX YEARS.

Year.	Cwt.	£
1850......	1,348,883 ..	668,053
1851......	635,826 ..	316,898
1852......	773,658 ..	386,111
1853......	1,133,609 ..	565,227
1854......	116,446 ..	17,467
1855......	58,261 ..	8,739

In the last two years we have given the approximate real value taken at 3s. the cwt.

Scotland ships a large quantity of her potatoes to the Bristol Channel ports, to Liverpool, Penzance, Falmouth, and Plymouth; and even sends some to Dublin. In the season ending February last about 6,000 tons were forwarded from Inverness through the Caledonian Canal; and although this amount was not near so large as in 1853 and '54, it was in excess of 1854 and '55.

Since the introduction of the potato, about 300 years ago, it has certainly made rapid progress. As compared with wheat, its nutritions properties are comparatively low; yet one acre of potatoes gives more food for man than two acres of oats. The potash and the soda present in the potato are considered to form important elements in its adaptation to nutrition, as a source of supply of those substances to the animal economy. Approaching as it does somewhat closely in its composition to rice and the plantain, which constitute the food of large masses of the human race, the potato is somewhat superior to these in gluten.

Wherever the Englishman goes, there he carries with him and endeavours to naturalize the potato: hence we find it cultivated in Australia and New Zealand, in India, our African settlements, the British North American Provinces, and Vancouver's Island. Indeed, in many subtropical districts it is grown under manifest disadvantages of season and soil.

In 1851 there were 77,672 acres occupied with potatoes in Upper Canada, and 73,224 acres in Lower Canada; the produce was 4,981,475 bushels in the former, and 4,456,111 bushels in the latter, the average being respectively 64 and 60 bushels to the acre. It is only about 120 years since the potato was first cultivated in America, and in the United States the product now exceeds one hundred million bushels, in addition to large quantities of sweet potatoes. The growth of the potato extends pretty generally throughout Europe. In France it is comparatively less grown than in the neighbouring kingdoms, but more attention is now being paid there to this root. In 1853 France imported 2¼ million kilogrammes of potatoes. Twenty years ago her production of this tuber amounted to 22,000,000 hectolitres; what it stands at at present we have unfortunately no French data for reference.

The comparative yield of potatoes of course depends much on soil, seasons, care in culture, and other points. Mr. Knight, when President of the Horticultural Society, obtained in the proportion of 34 tons to the acre by careful experimental culture. In many parts of Scotland 24 tons per acre have been raised. Mr. Wright, an English writer, expresses his opinion that more than a thousand bushels of potatoes may and will be obtained from an acre of ground; while an American author of good repute also affirms, on "the highest authority," that 4,000 bushels of potatoes have been grown in Germany on five acres of land (*American Patent Report*, 1844, p. 64). But these extraordinary yields are exceptional instances. In the State of New York, where great attention is paid to such cultivation, 325 bushels of sound potatoes, exclusive of about 10 of diseased, have been grown to the acre; and in other parts of the United States the produce on small patches has been reported equal to 230 bushels the half acre. The bushel being taken at about 64lbs., this is over 13 tons to the acre. But when we find that the *average* produce in Ireland in 1847 was 7¼ tons to the acre, it is evident that under careful management, with choice selected seed, 9 tons per acre at least might be generally raised, affording a very remunerative return.

The potato has other uses beyond its edible properties; both here and in other countries it is largely employed for making starch. A syrup is also prepared from it, which, when carefully purified, is clear and sweet, and is much used by the German brewers for sweetening beer, and other economical purposes. The meal or farina is also made into imitation arrowroot and tapioca, and it enters largely into consumption in the form of roasted starch, known as British gum (the dextrine of chemists), as a stiffening material for the use of calico printers and other textile manufacturers. From 12 to 17 per cent. weight of starch is obtained from the bulk of the crushed tubers. Preserved potatoes for ship use are very portable and nutritious, and might be much more extensively employed and cheapened.

Properly granulated and dried, potato meal forms an excellent tapioca. A few years ago we used to import large quantities of potato flour from France: in 1848 we received 17,222 cwt. from thence, and in 1850 12,591 cwt. For confectionary it is delicately white; and being nutritious and digestible, it might be in more general use with great advantage to the working classes, especially in the winter season.

With all the discussion that arose a few years ago about the potato, and the necessity for introducing fresh seed, new varieties, and other useful tubers that might by cultivation and attention be made available for food, but little has been done. Farmers and small cultivators are so much occupied with the important every-day matters of husbandry, that they have little time to devote to experiments. But as a national matter, and certainly within the scope and objects of our horticultural and agricultural societies, we should certainly do what France is doing—introduce and experimentalize more on farinaceous roots. There are dozens which might be tested and acclimatized. Probably some of the yams might gradually be inured to our climate; and there are many Indian roots used as food in North America and various parts of South America which deserve experimental culture. A small premium offered for any new edible root calculated to afford food for our rapidly increasing population, might draw forth enquiry, and elicit valuable information.

CORN-FIELDS.

When on the breath of autumn breeze,
  From pastures dry and brown,
Goes floating like an idle thought,
  The fair white thistle-down,
O then what joy to walk at will
Upon the golden harvest hill!

What joy in dreamy ease to lie
  Amid a field new shorn,
And see all round on sun-lit slopes
  The piled-up stokes of corn,
And send the fancy wandering o'er
All pleasant harvest fields of yore!

I feel the day; I see the field,
  The quivering of the leaves,
And good old Jacob and his house
  Binding the yellow sheaves;
And at this very hour I seem
To be with Joseph in his dream.

I see the fields of Bethlehem,
  And reapers many a one—
Bending unto their sickles' stroke,
  And Boaz looking on;
And Ruth, the Moabitess fair,
Among the gleaners stooping there.

Again I see a little child,
  His mother's sole delight,
God's living gift of good unto
  The kind, good Shunamite,
To mortal pangs I see him yield,
And the lad bear him from the field.

The sun-bathed quiet of the hills,
  The fields of Galilee,
That eighteen hundred years ago
  Were full of corn, I see,
And the dear Saviour take his way
'Mid ripe ears on the Sabbath day.

O golden fields of bending corn,
  How beautiful they seem!
The reaper-folk, the piled-up sheaves,
  To me are like a dream;
The sunshine and the very air
Seem of old time, and take me there

FARMING NOTES, &c., DURING A JOURNEY INTO SCOTLAND.

SEPT. 5TH.—Having harvested the greater part of my own corn, so as to permit me to leave home with the comfortable assurance that all will be right on my return, I set out on a journey into Scotland; and being my first visit, I left with many pleasing anticipations of enjoyment. The far-famed agriculture of Scotland I was now about to witness—to see its Lothians and Carses, its well-managed farms, neat farmsteads and innumerable steam chimneys attached thereto, and to gather some knowledge which I hoped to turn to practical use. To a farmer, these were great attractions; but having also a little taste for the grand and imposing in romantic scenery, and the beauty and nobility of cities, added to the many historical associations connected with that most interesting country, I did anticipate great enjoyment; neither was I in any respect disappointed. The agriculture, so far as I could observe it, on passing rapidly by rail and coach, met my general approval; but the mountain scenery, and the lochs or lakes, are superlatively grand and beautiful, far beyond my powers of description. The wild grandeur of the mountains, and the soft composed beauty of the lochs, is supremely lovely—to me overpowering. My whole attention was continually called forth to view some new phase or feature in the scenery through which I was so quickly and so delightfully passing. My imagination was also under no ordinary excitement, owing to the living interest Walter Scott has thrown over the whole country in his historical and graphic novels. The scene of many an incident therein laid down was often pointed out, as also the actual fields of conflict between the contending forces of Briton and Scot—Dunbar, Bannockburn, and others, all possessing remarkable interest.

My residence is in the midland circuit, reports of which are continually appearing in the *Mark Lane Express.* I therefore did not commence my notes till I entered Yorkshire at Doncaster, and I just noted down what struck me as worthy of remark along my whole route, with the view of showing both the state of the crops and the order of agriculture pursued.

From Doncaster viâ Bawtry to Knottingley all the crops look well. The land is good, and mostly well farmed. From Knottingley to York, and onward to Thirsk, the country is not a highly favoured one for farming; indeed, all seemed alike to partake of mismanagement: the land, crops, grass, and seeds—all defective, and dead fallows everywhere. The district produces wheat, barley, oats, beans, and potatoes, the latter looking well. As we pass onward, heath land appears; and all around, the crops are wretched. The land is undrained, and the cattle and sheep look to be doing badly; they are short-horns and Leicesters. The land is foul; much twitch, poppies, and daisy weed in the crops; and here and there an inferior crop of common turnips is seen. The harvest is slowly progressing, and is beautifully cut and shocked; the sheaves small, and no stubble left; very little carried. After passing Thirsk, some good turnip crops are seen, and better corn crops, and better land, but still strong clay; the shocks are very neatly capped; the few stacks made are little mushroom-shaped-roof ones. The crops of turnips not suited to the soil; plenty of charlocks. The fields too small, as, indeed, they are throughout this part of the route. As I pass onward, I find better farming; but the land still twitchy, and but little of the harvest in. Near Otterington we find improvements going on, drainage done, land higher and better, country undulating and much prettier, fields larger, and chalking proceeding in many places. The crops have decidedly a better appearance as we approach Northallerton. The sheep are pretty little Leicesters. The land is still heavy, and country nicely varied and undulating; crops not good, but fairly farmed. Passing on we find all the lands want draining; the benty, rushy, rough fields show it; the wild oats and little lands denote it: more grass, but strong clay land. The first mountain sheep appears. There must be some neglect in this locality; it requires more effort in improving its general management; why so much dead fallows? and some of the light corn crops are reaped, not mown. The country improves fast as we approch Croft station; the land is much better and better managed; though stiff clay, it is clean, and crops fair. Here the breeders purchase Scotch ewes to breed half-breds from Leicester rams. The lambs are now realising from 14s. to 18s. each. Darlington: the land is still strong; it is better farmed; the crops are light, but clean. As I pass on, a small flock of Teeswater sheep appear to the right; soon come to some bad crops, the land poor and likely to continue so; some good grass land in the valleys; country now abruptly undulating, and I come to limestone hills. Aycliffe: here is much grass, and a decided improvement in the country. There is not much corn cut, and the land is weedy. My impression of the farming in this part of the country, as seen from the line, is by no means elevated, thus far. I now pass a large park of poor grass land, flat and sedgy, reminding me of the fens; it is grazed by fair cattle and little heifers; much rough grass. We come to much better land, then over a swampy valley, guarded by a catchwater drain along the hilly ground; the lands are narrow, and grass bad. We soon come again to a turnip soil on the left, and speedily find ourselves amongst the hills and mining districts, and plenty of railways right and left, the country abruptly undulating. Shortly we are passing over a broad valley—all bad land, quite a coal district; but some good farming is seen, although in the midst of the Newcastle coal country.

Newcastle: Sept. 6, left Newcastle by an early train for Scotland; we had a plenteous rain all the way to Morpeth, principally a coal district. The country is now far better, and crops all good; there is much grazing land; sheep are well grazed; all the corn crops are laid, and *scarcely any of them cut.* We again come to poor land, stiff clay, and much heath and gorse; nearly all dead fallows; scarcely any turnips, and those bad. We soon pass some very commendable farming, and much that is bad, and see blighted wheat crops. The cattle are good short-horns. Waddington Station: the crops near here are thin, but lands cleaner; the soil poor, fields large, but thinly stocked; both grass and seeds; turnips fair. The lands or stetches are high, four paces in width, and not drained; occasionally fields are passed, indicating some attempts at underdraining; wheat in some places quite green: much heath and barrenness around, but the country looks rich and picturesque in the distance. We are at Acklington, and observe much better farming as well as better land; good farms and farmsteads appear; the valleys are rich, the hills rather barren, upon the whole well wooded; now a rich valley, then a barren hill quickly succeed each other as we sweep along. And now we have arrived to where the land is better, and farmed admirably, and the crops as we now pass along are very superior, quite equal to any I have this year seen. We are on the Duke ot Northumberland's estate, who is well spoken of here, though in such bad odour elsewhere. He has done, and is still doing much to improve his estates here. Draining is backward. There are many good crops of swedes, but very few mangolds anywhere. We have now our first fine view of the sea, and run along parallel with it all the way to Berwick. The run a very interesting one, with here and there a splendid sea view, and old castles, rocks, and islands, to charm us as we pass—Alnwick Castle, Bamborough Castle, Holy Island, with its lofty rock surmounted by the most picturesque of old castles, and many other objects of peculiar interest. We are at Bilton Junction. The country is now very undulating; steep hills and deep valleys, all very good; a clayey loam, rather stiff, and clay and lime is much used apparently. There are some good flocks of Leicester sheep; all is well farmed. We soon come to limestone; the hills and valleys small and steep. Now we are in a clay-land valley, where the wheat is still green. Soon we are at the solid rock, the first we have seen; again over a valley of good but heavy loam; the crops yet green of wheat, oats, tares. Saw a field of old spring wheat; country very irregular, all ups and downs; fields of strong clay, all the corn still green. Saw some deep trenching work done; some oats cut green. We pass a flat district now, of deep clay loam; some of the crops are cut in their green state. Now at Chathill. The crops are better still. We have before us some good specimens of Northumberland farming; again we find the grazing land with much rough grass and rushes. The sheep large Leicesters; some old spring wheat, which is green; others are cut, but none carried, as we could observe, along the whole distance from Newcastle. Good crops again; liming seeds, thrown out of carts. Peas and beans quite green to the right; the land strong, but well farmed, excepting too much bare fallow. Here harvest has just commenced; mowing prevails throughout the country along the line; lands weedy as we approach Belford. We have now rock upon rock; the wheats are all red varieties; peas green; beans cut and shocked. The crops are all good, though open to the severe blasts from the sea-coast. The country through which we are now passing is all flat, extending as far as can be seen from the rail on this rather hazy day. The soil heavy loam; much tares and dead fallows. Beans are grown in rows 2½ feet apart. The district is intersected by open ditches, which give it a marshy appearance. Pass the first steam-engine in a farm-yard, which also grinds wheat. Arrive at Berwick.

Berwick possesses very great interest, as being the Border town, besides its exceedingly beautiful bridges, and other great attractions. We pass the Tweed and are running over Scottish soil. We soon reach Ayton, and find a highly picturesque country, with its beautiful castle and well-farmed lands—liming pursued. We now leave the coast awhile, and pass good farms well managed; crops all good, and but very little corn cut; some seen quite green. Liming, seeds, &c., practised about this district. We come to a region of steam chimneys, every farmyard of any extent possessing one; as we pass along we observe them everywhere. The sheep are rather inferior Leicesters. The farms appear to be of considerable extent, and are farmed in a superior style, approaching nearly to our best English farming. Soil well adapted for turnips, and many are grown of excellent quality. The lands cleanly, and corn in general variety is taken. Barleys are very fine. The hills we now pass are higher and more abrupt. The sheep appear larger as we proceed, and the country is bolder and well farmed. The corn is under harvest operations along our course, and is beautifully done—not a stubble to be seen, the shocks set up safely and well capped. Potatoes backward, and in full flower. Lime is mixed with soil here, and is so applied. The rock here, as seen in the cuttings, is interlined with red chalk or marl.

We are now at Giant's-house Station. The country here is very precipitous, and high for good farming, but it is well done: the oats are yet green. Steam chimneys here and there, some apparently on small farms. At Cockburnspath, the country to the left looks high and bleak, and the crops are poor. On the lower ranges the crops are good, and much cut—beautifully cut and harvested: nowhere is work better done or more cleanly gathered; worth a guinea per acre readily in any country. No farm without its steam chimney.

Now, on our left is the battle-field of Dunbar. A high hill, and a greatly undulating country to the left; the sea on our right. Cromwell is said to have placed his army in great jeopardy here, owing to the confined space for his operations. To me there appeared room enough for every purpose, and plenty of defensible sites to be made available; but the castle and fortifications of

Dunbar certainly ought not to have been a sufficient temptation to induce an army to retire here, the country being bounded by the sea, so as to form a semicircle or bow between the Frith of Forth and the Tweed: an active enemy, moving along the apex, might have either hemmed him in, and in time destroyed, or caused the surrender of his whole army. I viewed the site and locality with very great interest, and was happy in the thought that now the only rivalry between the Scotch and English is to excel in producing the most abundant crops, and the peaceable strife which shall most improve the agriculture of their respective countries.

We pass on rapidly, and soon have a splendid view of the Bass Rock and Frith of Forth, &c.; pass potato fields all green and in full flower: the harvest beautifully worked. It appears to be customary, in this part of Scotland, for the women and children to do most of the cutting, which they do by hook close to the ground, and in large companies, the men binding, shocking, and capping it after them, and which they effect with great care and security; the sheaves small, and well laid. There was some in stack near Linton. The crops very good and clean; barleys heavy; turnips good on both sides of us for a long distance. The sheep, Leicesters: have not yet seen any Scotch cattle. We come to rock again at Linton; and the farming not quite so good, owing to the inferior soil. Some wheat quite green, and some cut, or rather bagged, with hooks. Land looks clean and right. We pass Berwick Law, a large, peculiar-looking hill close to the sea, on our right. Arrive at Drem junction, a good district for farming lying well in view to our left, being a part of the famed East Lothian district. Chimneys to be seen everywhere. Oats good; thistles in plenty amongst some wheat crops. Observe large gangs of reapers, men, women, and children. We soon approach the junction to Haddington, at Long-niddry. All farming operations appear to be exceedingly well executed near this place. The crops very good, but did not notice much stock of any kind, and no cattle. A large breadth of potatoes is grown in this district, all looking well. We soon observe a coal mine, pass a small field of mangolds, reach Tranent. Rocky country; notice a good crop of Italian rye-grass and clover; potatoes in abundance, and several crops in full flower.

We are presently at Inveress, around which are some beautiful clover fields. We also pass several coal mines along our route, which also becomes more and more delightful as we progress towards Edinburgh. Arrive at Portobello, and immediately shut up our note-book, to view the town, the frith, &c., and almost instantly find ourselves at Edinburgh, that princely city of the north. I need not stop to say how much I admired its castle, the Calton Hill, Holyrood, monuments, &c.; its beautiful streets, wide and straight, ornamented as they are by obelisks, statues, &c., and built of stone. I might fill many papers about Edinburgh alone: it abounds with most interesting objects. I pass on, after spending a very wet Sunday there.

Monday, September 8, left Edinburgh early for Perth. Cross the Forth, and take the rail; and at Kirkcaldy find ourselves quite in the country again, which is a very fine agricultural district. The crops are all good; and wheat, oats, barley, and potatoes are freely grown. We are running along the Forth, the coast pretty and rather flat, but all on rock. At Dysart we leave the coast; over a flat district, where neither the crops nor farming are at their best. The country is bold and fine in the distance; in many places the wheats are heavy and still green; the soil apparently a fine loam. We pass Marknot—a singular old town: the country is hilly and abruptly undulating, but well farmed. The harvest is progressing slowly; none carried. Turnips very good and clean. Land rich, and well wooded.

Falkland: We have been passing over valleys and through cuttings for some time. The crops are good; farming commendable. The valleys are fine corn lands. Here the hay is in small cocks, preparatory to restacking in larger stacks. Steam chimneys again appear, but not so numerously. Observe here the first head of Scotch cattle. Along this route are some good farms, well managed; and the harvest is progressing favourably. Potatoes green, and in flower. Arrive at Kingskettle, a pretty district; a level country, and well farmed; all the crops are good, and just commencing harvest. Swedes and turnips good. At Ladybank some mossy soil, apparently, in the valley.

At Ladybank some moory soil, apparently in the valley district, undulating now through a Scotch fir covert; many torn up by the roots; a poor district; crops bad, but clean and well done—none yet cut. Now over a valley again, and better land; pass Collespie—some corn cut, the hay-stacks very small; pass through a gorge in the hills: Lord Melville's monument in view for many miles: some oats cut on the left. Loch Lynch: The country now becomes bold and hilly. We are presently at Newburgh on the Tay, considerably below the railway line: potatoes diseased, land fair, country rocky and hilly; stock, Shorthorns and bad Leicesters and Half-breds. There is more corn cut along the valley of the Tay; marsh crops all good. Arrive at Abernethy, which is in the marsh between a gorge in the hills; opposite is the celebrated Carse of Gowrie, one of the richest districts in the kingdom. The crops are all good, many beaten down with rains and storms; no grass; clover still stands in little stacks in the fields, and tares for seed the same; the soil a deep reddish loam, or again drab and dark. Bridge of Earn: Arrive at Perth, the ancient capital of Scotland; fine bridge over the Tay, and delightful view along the river banks. Leave for Stirling; pass along the same line till through the tunnel to Forgandenny: a loamy district, crops down. Presently we come to better country and good farming, and crops varying; some good beans and other heavy crops; none cut; much green wheat, and backward; fair common turnips. The country at Forteviot becomes very bold, on our left very undulating; cattle, half-bred Shorthorns and Ayrshires; many potatoes are grown along our route, all green; wheat in stacks, all small and round; the sheep large Leicesters; the order of agriculture apparently like the Norfolk farming; fine crops everywhere, and nearly all ready for harvesting : pass a good lot of Ayrshires—sheep fair Leicesters. Come to Dunning : We have a fair country on our left, and well farmed. The crops of turnips very good, but no mangolds or coleseed to be seen. Now we get a fine view of mountain scenery to our left. The land we pass now is poor ; saw fields of old spring wheat ; soon come upon a strong red loam ; view a beautiful and well-farmed valley stretching off for several miles to the right ; the stock numerous and good, with great abundance of good corn and turnips. We are still close to the mountainous hilly district ; the day now clear and beautiful ; the view fine and extensive. Pass over a district of reddish clay and stone, and are again amongst steam chimneys. Observe the haycocks of both grass and clover hay are tied down with twisted hay-bands, and fastened to the ground. Auchterarder to our right is in a good nook, and looks attractive on passing. The crops of first-class character, and forward ; some beans cut quite in a green state. The town is in a salubrious situation, about a mile to our right ; a beautiful stream flows beneath us : now pass through a long wood of bad growth. The hills here are partly enclosed, and seeds are grown for the depasturing of sheep, which are Leicesters: Shorthorns are also grazed. Corn is grown here on the steep hill-sides, at present all green. Very unfavourable district for farming—too uneven for fair working, &c. The Crieff Junction Station is in a very deep cutting through a clay hill ; have not yet seen a flock of Scotch sheep : pass a large breadth of moor and sedgy boggy hills, undrained. The valley is large and convertible, and could be vastly improved by being well drained. Blackford is a fair town, in a very queer situation. The judicious outlay of capital, in draining and planting around, would be amply repaid. It is a large tract of country, all bleak, and heavy poor clay. Again we come to a bad district, clay and sand, all badly managed ; poor it is, but it might be greatly improved by proper drainage, which in some places has been commenced. We are now at Greenloaming : the soil clay upon gravel and rock ; some good scenery and open country to the right. The rocks seen through the surface soil near here ; notice a dairy of Ayrshire cows : arrive at Dunblane. The country lately passed is very poor on the left, but fair on the right, and more dairies of Ayrshire cows are seen ; the soil on rock, which crops through occasionally. It is badly farmed, and worse drained ; here capital might be very profitably expended in improvements. Dunblane is prettily situate, and a great and favourable change ; it is well wooded. The hills are all clay, not high, but very uneven, yet well farmed near the Bridge of Allen. The stock good, both short-horn cattle and Leicester sheep, which may also be observed for some miles along the line near here. Near Dunblane it is very hilly and rich to the left, and good farming to the right ; a large valley : corn cut, and crops good. Arrive at Stirling, a singular town, having all the marks of historical antiquity about it. Its fine imposing old castle commands extensive and highly interesting views, both agricultural and historical. The fine fertile and richly-wooded Carse of Stirling lies underneath, and stretches along for some miles to the north, bearing the heaviest crops of grain and roots, and, as I subsequently found, cultivated in the best style of husbandry, and grazed with the most profitable varieties of cattle and sheep. The views, possessing great historical interest, are very many ; almost every turret, tower, rampart, corner, every place is rendered famous by the deeds of old, that have been done upon or in their vicinity. The castle itself, 220 feet above the Carse, and remaining intact since "the olden time," commands a most magnificent panoramic prospect, including the winding Forth, displaying its serpentine course through a rich plain ; the Ochill, Pentland, Lammermuir, and Campsie hills, and the battle-fields of Falkirk, Bannockburn, Sauchieburn, and Sheriffmuir—I lingered on the castle walls enjoying such varied associations and beauties ; a world seemed almost to pass before me in a few minutes. Here Sir Wm. Wallace humbled the proud Edward I. There, according to Walter Scott, The Douglas showed his great strength before King James. Yonder the field of Bannockburn, where 30,000 brave Scots routed 100,000 English, and raised Bruce to the kingdom. Further on is Sauchieburn, where James III. was defeated by his nobles, and murdered ; the whole most deeply interesting. But we pass on our journey. Leaving Stirling by coach for Loch Katrine, we pass along the Carse of Stirling to Doune, where there is some fine old grazing land. The Deanston Works are soon in sight, and with them came thoughts of Smith and subsoil-drainage, the great pioneer of the new system. The country all along is fairly farmed, and shows good management in every respect. We keep nearing the mountain scenery, Ben Ledi rising majestically before us "amidst the woods of Charchonzie and the groves of Leny ;" mountains and crags come into view,

> "Whose cliffs in solemn majesty are piled,
> And frown upon the vale with grandeur wild."

The evening is now closing in, and we can only just mark the spots, as we pass, which have been immortalised by Sir Walter Scott in his "Lady of the Lake." There Fitz-James and Roderick Dhu fought ; here Fitz-James stood with his back to the rock, defying his assailants ; there the steed of Fitz-James stumbled, and fell over a rock, and died, &c., &c. Every nook has some note of interest. Lord and Lady Willoughby have erected near this point a pretty kirk ; and in the dark we reach the famed Trossach Hotel.

The following morning finds us on our way, by cars and busses, to the lovely Loch Katrine. The Trossachs disappointed me, not being so wild and romantic as I had conceived it to be. It certainly bristled with Alpine firs, tall and straight ; and the crags, defiles, and terrific chasms were of every shape, huge and broken. We soon arrive at the beautiful Loch Katrine—extremely beautiful and lovely, past conception ; the utmost wildness harmonizes with beauty and loveliness the most exquisite. "Ellen's Isle," the home of the noble Ellen Douglas, is extremely attractive, the trees gracefully dipping into the water from the thick foliage of the wooded island—the opposite shore corresponding to it, and the back-ground or mountain richly wooded to the top. The lake—clear as crystal, and without a ripple —gives such a calm, peaceful grandeur to the scene, as fairly to upset the highest notions I had formed of Nature's most beauteous loveliness. I passed on in silent admiration, deeply captivated by all around me.

The brightest scenes will fade. We are soon, too soon, at the Wharf, near Stronaclachar; we land, and take our places in cars already waiting our arrival. The contrast now is great. We are passing over an uncultivated tract of sterile ugliness, only enlivened by a retrospective view of the lake. Near Inversnaid we descend by a steep and serpentine incline. Here is an old fort built, to keep in subjection the Macgregors in days of yore. Inversnaid is on the shores of Loch Lomond, and charmingly situated. We left by steamer and fly, five miles up the loch, for the Pass of Glencoe. Loch Lomond is beautiful at this point; but it is far surpassed near Ben Lomond, and towards Glasgow. We land at Tyndrum, and take coach for Fort William, sixty-four miles. The country through which we pass is one wild tract of forest and sheep-walks, the former predominating. No village nor neat white cottages to enliven and cheer the scene; here and there, at exceedingly wide intervals, a shepherd's dull stone-walled cabin, or a still ruder keeper's lodge. Occasionally the "box" of an enthusiastic lover of sport is passed, or a solitary farm-house in some rather better hollow of the mountains, where a flock or two of sheep may find food and range; our route beside a turbulent stream, constantly tumbling over jetting rocks and mimic waterfalls. And thus it was, on and on—on, on, for many weary miles: our course still ascending till we reach the point where our stream ceases to flow; and we presently find ourselves along its side, descending in the opposite direction. Ben Moore is now close to us, and our route now very rapid and very dangerous; the inclines very steep and continually tortuous; some of the turns very sudden, and almost unseen round the sides of these steep hills. Nothing in Scotland is more sterile, dreary, and miserable—gloomy beyond description—than the tract over which we have just passed; and now enter the moor of Rannock. The country before us looks wild in the extreme—almost black—it is the Black Forest. At length we reach the valley; it is narrow, and not convertible to any useful purpose of agriculture. Pass on to Inveroran. Here is a seat of the Marquis of Breadalbane, a place suited to its design—a good shooting-box. All the country, as far as can be seen, is devoted to sporting; deer-forest after deer-forest, without change, for miles upon miles. Why this untoward conversion of profitable sheep-walks into deer-forests and grouse-preserves? The north of Scotland is now almost exclusively devoted to game, and for the recreation of Southern sportsmen, who flock thither in great numbers. It is the growing fashion of the age. The north of Scotland is yielded up to the recreation of the wealthy, of all classes and from all countries. We found English, Irish, Scotch, Welsh, all off with dogs and guns for the Highlands. Nor need we wonder: landowners can and do make much higher rents of their estates as game preserves than as sheep-walks, in some cases to the increase of several hundreds per cent.; in one case I heard of an increase in one district of from £80 rental as a sheep-walk, to £1,200 per annum as a stocked game preserve. What effect this conversion of such extensive sheep-walks into game preserves or deer forests will have, I am unable to foresee; but it must decrease the supply of mutton and wool very considerably—it may add to the luxuries of the rich, but it must reduce the food of the poor. What a power there is in example, for good or for evil! When our noble and beloved Prince first visited Balmoral, there were but few sportsmen comparatively; now the whole of the north of Scotland is overrun with them, and the shooting of a given district is as much sought after as the choicest farm. The nobility and gentry, the clergy and laity of all orders, judges, councillors, merchants, traders, officers in the army, officers in the navy, all—all visit the north for the season. It was amusing to a plain man like myself to hear the homely remarks continually made as to the immense influx of visitors—"The world is visiting Scotland. What are we to do? everybody is coming: we can't find them room." And at every place of nightly resort the scramble for lodgings is really ludicrous: high-born dames are seen in close contact with the lowest plebeian, and hastily climbing the same ladder to get a first chance it may be of a cottage bed; or, again, the following morning, in all eagerness to obtain a good place on board the steamer, elbowing their way through the crowds most energetically!

But to my journey. We at last came to the most remarkable of all Scottish rides and Scottish scenes—the Pass of Glencoe. It is extremely grand and imposing: the awful height of the rugged mountains on either side, their steep, almost perpendicular sides enveloped in clouds, the rude and dangerous road over which we travelled, actually begat a feeling of fear and awe in the mind. I am as little troubled with external fear as most men; but the awful grandeur of the place was quite overpowering—it was intensely interesting. Our coach was necessitated to travel at the utmost available speed of the cattle harnessed to it. The abrupt turns of the road —the exertions of the guard and coachman to keep all right—the ever-varying views that presented themselves of rugged mountains, far and near, as seen through the deep dark gorges—the Cave of Ossian here—the scene of the cruel massacre in the time of William III. there—the majestic eagles sailing overhead, and now and then piercing the clouds, kept us in the greatest excitement, and we could scarcely draw breath till we arrived at the end of the pass. The extensive slate quarries of Ballachulish were soon reached; then came the Inn, and ferry over Loch Leven, which we passed, and in the darkness took our way for Fort William, arriving too late to take any note of the district through which we were passing, save that on our left was Loch Eil, and on our right precipitous scenery, with the famed Ben Nevis near it. Fort William is a little town formed of one long street alongside the loch; and on the opposite of Loch Eil is the entrance into the Caledonian Canal. It has a fortress, which with Fort Augustus, some thirty miles higher up, was built to check the inroads of the Camerons and other Highlanders, and to bring them into subjection. Not far from this place is Prince Charles's Monument (The Pretender), where he landed in August, 1745, expecting to find a general rising in his favour; but few appeared—it was an anxious time for him, and it was not till he beheld 700 Camerons marching down the mountain's slope,

> "All plaided and plumed in their Tartan array,"

that he took courage, and forthwith planted his luckless standard. Here I remained a day to visit Ben Nevis, my time of departure precluding my ascent. One is struck with the immensity of its stupendous dome, from whichsoever way it is viewed, in walking to its foot down Glen Nevis, through pretty meadows, and along charmingly diversified river and mountain scenery. At its base nothing but wild, rugged, rocky grandeur is before you; the top mostly enveloped in clouds. All to the right, left, and behind you, is one scene of mountain gorges and cloud-capped summits; some very precipitous, some gradually sloping up to the very top, and covered with heather and sedgy grass, all devoted to game—game! and here and there are very comfortable residences for the sportsman. The valley itself is well farmed and grazed. On returning, the novel sight of salmon trying to leap a waterfall amused me greatly.

The steamer by which we left Fort William glides smoothly down Loch Eil; fine views of Ben Nevis and other mountain scenery and rocky shores are continually presented to us on either side. Loch Linnhe is now reached; a wider expanse of water, and scenery most interesting. Now we pass the Isle of Lismore, gliding peacefully along its shores, covered with the usual attractions of wood and rock, and now and then we pass some castle or house of mark along the coast; the sea studded with innumerable rocky islets, rugged and barren. We reach Oban late, and a regular scramble takes place for the shore, to secure lodgings; and woe to him who has not previously written to engage them. A large fishery exists at Oban; this, with its summer excursionists, forms its business. We left early by steamer for Glasgow, and had a most delightful voyage along the coast, richly diversified with woodland and mountain scenery, and relieved by the beautiful residences of wealthy citizens. The islands we pass possess great interest. We arrive at the Crinan Canal. The transit is highly interesting; one might fill a page here: the perfect smoothness of the water lulling you to rest—the picturesque riders of the horses by which our boat is drawn along—the great number of promenaders, preferring their own feet to the confined boat—the almost desolate character of a part of the country. The number of locks passed, we at length, after nine miles of inland sliding or gliding—for it resembles one long slide—reached Loch Fyne, and the thrifty fishing town of Aird. We are soon on board, at this point, the Glasgow steamer, with all her rich appointments. Our course now is down the loch, where we are amused by porpoises chasing herrings, &c., &c. We soon touch the Isle of Bute, and sailing up the far-famed kyles of Bute, we reach Rothesay, one of the most attractive towns and sites I have yet seen, and are soon on the Clyde, full of life. We are constantly passing some large steamer filled with passengers. Dunoon is very pretty—Greenock, all life and business—Dumbarton's castles awakes anew our Highland scenes. We are at Glasgow! what wonders strike us on every side: the gigantic steamers on the stocks; the immense factories; its beautiful streets, all great, and denoting a city of vast resources and immense business. What is wonderful is, you cannot divine what department of trade preponderates, the whole is so vast and so numerous in its establishments, and all the work of about fifty years—astonishing! I should like to linger here awhile, to describe more of the scenes I have passed and the city in which I now sojourn, but must apologise for that already done, and proceed with my journey.

We left Glasgow early for Carlisle by railway. The country is poor, crops backward, but little cut; very little drainage has been effected near Glasgow. As we pass along we soon come to coal mines, and much heath and barrenness. Some attempt at subsoil drainage is seen on our left. Oats are yet green; soil a cold clay, with minerals beneath. Pass several small stations. Pass a well-managed farm; crops all heavy, but green. Further on some good farming appears, and much drainage is going on. Farmers deserve much credit for management here; coal mines and good crops in the same fields, and many of them. We reach Coatsbridge; more mines and less farming; plenty of smoky furnaces. Pass Whifflcet and Holytown; these are in the coal district, and mines everywhere. We are now again in a farming district; some good crops of white wheat not cut; country nicely undulating; some cut, but green; very large iron works to our right. Again amongst the mines, and plenty of them. Arrive at Motherwell Junction, quite a coal district, but the surface nearly all under cultivation; the soil clay, and rather wet; some stone quarries, dark in colour; dairy of Ayrshire cows to the right, also some capital crops in the valley to the right; some green wheat, and blight is here seen. Some good farming all along to Wishaw; at Wishaw the land appears heavy, but some of the corn lands are drained and well managed; this place is celebrated for producing the best coal in Scotland; the crops near are all green, but they are cutting them. We are now in a cold and hilly district. Pass through a limestone cutting. Overtown: Now we pass between hills deep on one side, flat on the other; limestone and clay interlined on the sides of the cuttings. The country improves as we approach Carluke, and it is better adapted for farming; fair crops of oats and wheat are seen, but not clean: no turnips, and not many seen along our route. As we approach Cleghorn we pass some good crops of beans, wheat, and oats, and fair crops of turnips; clay soil and strong. We are now near Lanark, which is to our left. The country now becomes abruptly undulating, and we leave the region of mines behind us; the hills steep, the valleys deep, but they produce some good corn and turnips: no corn cut. We now pass over a sandy moor and heathy district, and reach Carstairs, where there is a junction for Edinburgh. We again begin to see steam chimneys, but the country is not very good for farming; most respectable farmhouses, &c. The country for some miles now does not exhibit much farming; the hills high, valleys narrow; the hills mostly grazed clean and fine, the herbage good. Pass a fair and wider valley, with Cheviots and Ayrshires grazing upon it. We reach Abington, situate amongst high and healthy hills. At Elvanfoot we find some good land, on which were fatting short-horns and herds of black cattle to the right, with large Cheviots; this land ought to be drained, to make it first-class land; saw some good hill grazing; all grass. Beattak: Here is some useful land in the valley; oats all cut; no wheat; beginning to cut into little cobs not wider than will allow two short sheaves to bind each other; sheaves very small; all oats; quantities of railway sleepers are cut near here—we are soon in a better country. Wamphray: The train runs on high land here: the valley a long way below us. It is full of ditches: oats only are grown here. Denwoodle: Clover and seeds here. All oats still, and just ready for stacking, but the constant rains prevent. The sheep are good Cheviots all along our route now, and some Short-horns are seen. Near Nethercleugh is a better country, but not good. Some good turnips. Oats still; neat cottages: some cabbages. Much better farming. The land better; crops better. Saw some good Cheviot lambs. Land hollow-drained in some places. Many good crops of swedes. All oats still, and everywhere cleverly capped and beautifully cut and harvested. Apparently a district of ironstone. Lockerbie: Raining very fast; nothing carted; large and good Cheviots grazing near. Soon get to a wide and open district, all farmed. Many oats to cut. Swedes thin, crops bad. At Ecclefechan the land is better, but no wheat seen yet: good black oats. Formation, red sandstone. The country now to the border of Gretna Green is very similar—nothing good strikes the eye, nor is it greatly improved since the days of border warfare. There is some fair farming, and the use of lime seems common. Wheat is here cultivated, but little of it is cut. It has the appearance of a somewhat neglected district—no great improvements of old date, and but few of recent time. It strongly reminded me of the raids of old, who could improve his holding if lawless Scots or proud tyrannical Nobles demanded the produce. The whole country for miles requires spirited cultivators and improving landlords, which ere long will make it as attractive and fruitful as Nature designed it should: its capabilities are good.

We now pass the Border. The same remark holds good. There, too, is the absence of ancient castles, old homesteads, and well-grown woodlands—all denoting that the improvements are of recent date. We are happy in bearing our testimony to the rapidity with which they are proceeding: it seems quite general. As we pass on, my attention is imperceptibly drawn to a comparison between Scotch and English farming; and I am bound to confess that, so far as I have been able to observe, on passing so quickly over such a large breadth, the superiority is in favour of the latter. The crops in Cumberland, Durham, and Northumberland are in general far beyond those of Scotland; nor is Yorkshire far behind. In cleanliness they are also equal; but in the cutting, tying, and general care bestowed on harvesting the crops in Scotland, I know no equal. I think more wheat might be grown to advantage there. We have so many new varieties of wheat now, that some of them might be acclimatized. I would try all, sooner than fail, beginning with the old bearded spring wheat to the cold Siberian red. The Talavera, the Cape wheats, or any early variety, should be preferred. The introduction of steam-machinery into every Scotch farm-yard cannot be too highly commended. This far surpasses English ideas of management. I hope ere long to see the steam chimney wherever I go: every farm of 300 English acres ought to possess one. Let me urge upon every English farmer the necessity of a visit to Scotland: he may learn much that will be to his benefit. His Scotch brethren beat him in steam appliances, in economical management and fattening of stock, in general cleanliness of culture, and in careful appointment and distribution of labour, and, unquestionably, in energy and enterprize. Let us ever rival each other in the laudable endeavour to provide the cheapest food and greatest comforts for our consuming population.

SURFACE BURNING EARTH AND STUBBLES.

Sir,—We beg your indulgence for a space to set this subject of ours on a right footing. It has been misconstrued, and we do not think it was intentionally, as appears from a friendly letter, and reply we have received from Mr. Baker personally, which implies that he is not opposed to our principles, as we expected, but only (and very justly too) to all false statements. Such being foreign to our intention, we beg briefly to correct what has been mistakeably construed and considered by him to be wrong in this matter of paring and burning.

We did not attempt to arrogate ourselves, as the practice is as old as the hills, but we simply begged to draw attention to "our successful operations of it at that present dry time." The difference between Mr. Baker's statement and cost of ours only appears by his burning and paring more earth and more deeply than ourselves in the operation, though no doubt paying better in the end, even if he had used dust coals, as some do, to keep their fires up when wet overtakes them. With this exception, however, we believe, in our humble opinions, that burning the earth to a red-hot bricky colour and substance destroyed the organic properties of the soil too much, and on very many soils does not so much real service as partially burning it; and it will be recollected, and for this reason it was, that we only pretended to "burn some, and *scorch* the rest of the soil sufficiently to kill all living substances the fires were composed of," the steam and smoke enriching the soil in no small degree. Of course Mr. Baker's description of his broadsharing with four horses, instead of ours with three, would make his account in this item different, and the expense more than ours; but yet his statement is only 6d.

more, though the expense of implements, irons, &c. were intended to be included in both statements. But he "crosses" the land with three horses, which swells his account 3s. 6d. more than ours, we finding it unnecessary for this operation, on account of our rowed wheat crops being so well cultivated in spring with the scarifier, and by repeated hoeings; 9d. more is set down for harrowing, whilst our raking answered for this. Burning is set down in Mr. Baker's item as £1 6s. 8d., whereas we expended and noticed only 15s. We did not note 10s. or 12s. per acre; this is an error of our friend Mr. Baker's, who no doubt took it from the *Gardener's Chronicle and Agricultural Gazette* of Sept. 13th, where we observe, or it may be noticed by others, that the editor himself wrote, "The expense of these operations need not exceed 10s. or 12s., &c." This was a paragraph of his own words in the leading article of that paper. Again, we used no eight trusses of straw, and no wood or bushes; and here is brought to view 8s. more expenses than ours, we having made shift without any. Lastly, we left out of our account the spreading altogether, and here again is 4s. 2d. more, thus swelling his total, and making in all more than our expenses per acre as follows:—

4 horses, &c., broadsharing	0	6
3 do. do., crossways	3	6
Harrowing	0	9
Burning	11	8
Spreading	4	2
Straw	4	0
Wood and bushes	4	0
Expense per acre more than ours	£1 8	7

It gives us great pleasure to be able to set differences of this sort right in so friendly a manner by personal correspondence and common civility, at a trivial expense and trouble. Thanks be to the penny postage for this.

The "Second Series," No. I., (Sept. 15), by "An Old Norfolk Farmer," is good, except the remarkable case he mentions as recorded in the Philosophical Transactions, vol. lviii, p. 203, &c., which has nothing to do with the natural prolific properties of wheat, though it is quite possible to obtain even more than is there recorded, wonderful as it is, from a single grain or plant, by propagation on heat, or in nursery beds, &c. But this is not the point to be desired, seeing it cannot be done on a broad scale; and therefore such a statement, though very probable and true, tends to throw a dark shade on the subject of our thin sowing. Our practice, however, can be carried out universally, practically, and profitably, without putting the farmer out of the way of his regular routine of implements, except the steam plough, which will eventually assist us in "turning the world upside down," as we are sarcastically told we are about. "Upside down!" Yes, sir: this is what it wants—at least the earth's portion of it; and after this is accomplished we shall be able to grow over 10 qrs. an acre of wheat as easily as we can now 4 or 5, and grow plenty of corn to feed ourselves with (barring drink, for it would claim all the nations of the earth to grow enough to satisfy English people with drink!), without being beholden to other nations for corn; and this is the way to keep peace, for they will be ever and anon quarrelling and fighting with us, and no wonder, if we are always draining their resources as we have lately of their staff of life.

Sir, yours, &c.,

A. HARDY AND SON.

Limbourne Brook, and Knowles Farms, Sept. 22nd, 1856.

MALT AND HOPS.

RETURN TO AN ORDER OF THE HONOURABLE THE HOUSE OF COMMONS, DATED 14 JULY, 1856—FOR,

RETURNS "Of the Number of Bushels of Malt brought to Charge in each of the Three Years ending the 5th or 1st day of July 1854-55 and 1856, as the Years may end on one or other of those Days:"

"Of the Number of Bushels of Malt in Stock on which additional Duty was charged in May 1854, and the Amount received therefrom:"

"Of the Number of Bushels of Malt in Stock on the 5th day of July 1856, and the Amount to be returned thereon:"

"Of the Average Price of Barley for each of the Three Years before named:"

"Of the Amount in 'Old Duty' charged on English Hops for each of the before-named Three Years:"

"And, of the Number of Cwts. of Foreign Hops Imported in each of the same Three Years."

Number of Bushels of MALT brought to Charge.

Year ended 5th July, 1854	39,511,220
„ 30th June, 1855	36,398,668
„ 30th June, 1856	32,345,642

	Bushels.	Duty.		
		£	s.	d.
Malt in stock on which additional duty was charged in May, 1854	14,751,865	952,677	13	9
Malt in stock on 5th July, 1856, on which additional duty is to be returned	12,968,086	837,247	4	3

Average Price of BARLEY.

	s.	d.
Year ended 5th July, 1854	37	0
„ 30th June, 1855	32	10
„ 30th June, 1856	37	9

Amount in "Old Duty" charged on ENGLISH HOPS.

	£	s.	d.
Year ended 5th July, 1854	152,143	10	6¾
„ 30th June, 1855	47,327	17	10¾
„ 30th June, 1856	398,768	14	11½

Inland Revenue Office,
26th July, 1856.

L. S. LYNE,
A. and C. G.

RETURN of the Number of Cwts. of FOREIGN HOPS Imported in each of the Three Years ending 5th or 1st day of July 1854-55 and 1856, as the Years may end on one or other of those Days:—

	Quantities Imported into the United Kingdom.
Year ending 5 July 1854	54,885 cwts.
„ 30 June 1855	120,800 „
„ 30 June 1856	20,549 „

JOHN A. MESSENGER,
Inspector-General of Imports and Exports

Office of the Inspector-General of Imports and Exports,
Custom House, London, 26 July 1856.

RISE AND PROGRESS OF THE INDUSTRIAL RESOURCES OF THE UNITED STATES.

No. II.

In the first article of this series the introduction of white and black slavery into America was explained; we now propose to notice the attempts that were made to establish an aristocracy. Virginia had been granted to the noblemen, gentlemen, and merchants of the City of London, in whom was vested the whole management of the colony. The supreme legislative authority was vested in the king, who appointed the local councillors, and removed them at his pleasure. These noblemen and gentlemen were absentee landlords who wanted rents, and therefore they sent out tenants, themselves remaining landowners. Of the first expedition, consisting in all of one hundred and five persons, but twelve were agricultural labourers. The great majority of these emigrants were of the class termed "vagabond gentlemen," too proud to work, but not ashamed to reap where they had never sown. As owners, they were only inclined to overlook or superintend; and this they did by amusing themselves in hunting, shooting, fishing, and attending to the breed of horses. As gentlemen deemed it a degradation to cultivate the soil with their own hands, the importation of labourers under bonds of servitude was systematized. The trade in white bondsmen being lucrative was actively prosecuted, particularly as every importer of deluded or kidnapped Englishmen received a grant of fifty acres of land from the noblemen and gentlemen proprietors for every unhappy wretch thus brought into the colony. The Bristol merchants reaped large profits from this nefarious traffic. The mayor and justices of that city used to intimidate small rogues and pilferers, who, under the terror of being hanged, prayed for transportation, as the only means of escaping the gallows, and were then divided as booty among the members of the court by whom they had been condemned. By them they were sold to the aristocracy who had received the grant of Virginia. In the time of King James the Second the infamous judge Jeffries condemned prisoners to transportation as a saleable commodity. All the courtiers sought their share in this rich harvest, derived from Monmouth's rebellion. There is a letter from Jeffries to the king on the subject:—"I beseech your majesty that I may inform you that each prisoner will be worth ten or fifteen pounds a-piece; and, sire, if your majesty orders these as you have already designed, persons that have not suffered in the service will run away with the booty." Many of these unfortunate convicts were persons of family and education, accustomed to elegance and ease; but the malignity of the king and the avarice of the aristocracy reduced them to the wretched condition of indented bondsmen; and James strictly ordered the governor of Virginia to retain them in bondage for at least ten years. However, in spite of all these horrible proceedings, the absentee landlords failed to establish their system of cupidity, and despotism sought in vain to wield its iron sceptre over the colony. All that tyranny and injustice effected was to people America with men nurtured in suffering; but the day of emancipation was already inscribed on the rolls of the future. With the close of the reign of James the Second, the traffic in white slaves was discontinued, and the African coast became the great market.

There was another grand scheme for getting wealth without labour, which deserves to be mentioned, if only because the great name of John Locke was in some degree mixed up with the project. In 1663 Lords Clarendon, Albemarle, and other noblemen, obtained a grant of the country now included in the two Carolinas. Two years later they obtained further grants of the land now included in all the states south and west, and extending far into Mexico. For this enormous territory a constitution was to be framed, and it was drawn up by Locke and Shaftesbury. It openly avowed the intention of keeping the people in slavery. The leading points are thus condensed by Mr. Carey, the American economist: "To the extent of two-thirds, the land was to be inalienable—the property of barons, caciques, palatines, &c.; with tenants, adscripts of the soil, subject to the jurisdiction of lords, from whose decision there was no appeal. The leet men were to be leet men through all generations. A grand council of fifty—of whom fourteen only, holding their seats for life, represented the commons—was mixed up in the scheme, with courts of heraldry, of ceremonies and pedigrees, of fashions and sports; and this absurd scheme it was fully believed would endure for ever. Land was to be all, and man nothing." It is curious that the fine intellect of Locke should so far have overlooked the principle of progress as to imagine that a scheme founded on exploded feudalism would be immortal.

The strength of the colonists, in a military sense, was first revealed to themselves by the capture of Louisburg from France, in 1745, while that country was at war with Great Britain. That enterprise was undertaken by the sole authority of the Legislature of Massachusetts, under Governor Shirley. General Pepperell commanded the expedition, and he had under his orders five thousand colonists. The enterprise was successful; and though a British force co-operated under Commodore Warren, despatched from the West Indies, nevertheless a large share of glory was awarded to the colonial troops. This event is a memorable epoch in Amecan history. The immediate result of the victory was, that the statesmen both of France and England formed enlarged ideas of the value of America.

The next important event was the war between France and England which broke out in 1756 and terminated in 1763. In it the colonists played a most distinguished part; they furnished 28,000 men, who acted in concert with the British regulars, and from their harbours sailed more than four hundred privateers, which inflicted immense losses on the French West India islands. After a struggle of eight years, peace was concluded, by the terms of which France ceded Canada to Great Britain, and the Spaniards East and West Florida; so that Great Britain became almost sole mistress of the North American continent. Up to this date the colonial government had been mild and just, very few acts having been done to make the people discontented; at any rate the idea of revolt had never been entertained. The British Government had, however, interfered in internal affairs, and thus created precedents which afterwards led to disastrous results. It had prohibited the cutting down of pitch or tar trees not standing within an enclosure, and declared it illegal to erect any mill for slitting or rolling iron, or any furnace. Hatters were not allowed to have more than two apprentices, and were forbidden to employ negroes. These unwise regulations indicated the encroaching spirit of the government, and its desire to dictate; but they were evaded by the colonists, and therefore did not provoke resistance or remonstrance. The feeling they excited was rather contempt than anger. The year 1764 must be taken as the date at which colonial oppression commenced and the seeds of disunion were sown. The preludes to the war of independence will here be described, not only because they have a profound historical interest, but because a very faint and inexact notion of the rise and progress of the industrial resources of the United States would be formed unless the transition from the condition of a colony to the condition of an integral kingdom were presented at least in its broader outlines and more defined features. It was British interference with American trade that caused the revolution and struck out the brightest jewel in the British crown. Men then ruled in England absolutely ignorant of the true principles of commerce; they thought it required regulations by legislative enactment, not aware that if left alone it would regulate itself: and so every colonial minister in Downing-street, crude in his thoughts and fussy in his orders and operations, imagined that at 3,000 miles distance his protecting and directing spirit was needed to teach the colonists how to buy and how to sell. But let us do justice to the deceased statesmen of the period; they were not more ignorant than the majority of parliament or the majority of the constituencies: the blind led the blind, and America was lost, and one hundred millions of national debt contracted, because King, Lords, and Commons lacked common sense.

Let us resume the narrative of facts. Before and after the war of 1775 regular traffic had been carried on between the British and Spanish colonies, and it is important to indicate its nature, that we may better appreciate the folly and tyranny of the government, and the real grounds of colonial indignation. The colonists sold to the Spaniards British manufactures, receiving in payment gold and silver, which metals they remitted to the mother-country in discharge of the debt due by them for those manufactures. Now, in strict accordance with the letter of the law, this trade contravened the provisions of the English Navigation Acts; but as England received the bullion, on which she put an ignorantly exaggerated value, government for some time closed its eyes to the illicit commerce; but in 1764 it was annihilated by heavy duties, which amounted to a prohibition. The preamble to the act which effected this change was thus worded—"Whereas it is just and necessary that a revenue be raised in America for defraying the expenses of defending, protecting, and securing it, &c." And then follows the scale of duties imposed on goods from French and Spanish colonies imported into America, such as sugar, coffee, molasses, syrups, &c. Here, then, was the commencement of a fiscal system perfectly new. Nor was this all; it was ordered that these duties should be paid in gold and silver, and entered in a separate account at his majesty's exchequer, and with such gold and silver inclusively the cost of defence was to be defrayed. To raise revenue in this manner by parliamentary intervention was without precedent; and a people so jealous of liberty as the colonists were justly alarmed lest such a precedent might become the pretext for indefinite taxation and a capricious interference with trade. But what most embittered their resentment was the distinction drawn between bullion and colonial paper money, for colonial prosperity depended on the latter. We have noticed the Pennsylvania Loan Office, by whose bills of credit the land was brought into cultivation, and will now quote a passage from the writings of Dr. Benjamin Franklin on colonial money, which he wrote while residing in England, in 1764:—

"On the whole, no method has hitherto been formed to establish a medium of trade, in lieu of money (that is, metallic), equal in all its advantages to bills of credit, founded on sufficient taxes for discharging them, or on land security of double the value for repaying them at the end of the term, and in the meantime made a GENERAL LEGAL TENDER. The experience of now near half a century in the middle colonies (New York, New Jersey, and Pennsylvania) has convinced them of it among themselves by the great increase of their settlements, numbers, buildings, improvements, agriculture, shipping, and commerce; and the same experience has satisfied the British merchants who trade thither, that it has been greatly useful to them, and not in a single instance prejudicial. It is, therefore, hoped that securing the full discharge of British debts which are payable here (in England), and in all justice and reason ought to be discharged here in sterling money, the restraint on the legal tender within the colonies will be taken off, at least for those colonies that desire it, and where the merchants trading to them make no objection."

During the war which commenced in 1755 there had been an unusual and considerable trade to America, in consequence of the great fleets and armies there engaged, and also on account of clandestine dealings with the enemy, who were cut off from their own supplies. This created large debts. The briskness of trade ceasing with the war, the merchants were anxious for payment, which occasioned some confusion in the colonies, and stirred up a clamour against paper money. The English Board of Trade, of which Lord Hillsborough was president, joined in that opposition to paper money being used in the American colonies, as appears from their report. Dr. Benjamin Franklin, being at the time in London, was asked to draw up an answer to it, and from that answer the preceding extracts have been taken.

In consequence of the new orders from the home government to raise revenue through customs duties, every part of the coast was harassed by men-of-war, now for the first time armed with regular commissions of custom-house officers, which invested the shores, and gave to the collection of revenue the air of a hostile contribution. About the same time that these regulations seemed to threaten the destruction of the only trade from whence the plantations derived any specie, the act was passed putting a stop to the future emission of paper money. The edict, therefore, was equivalent to the complete suspension of all external commerce. That commerce, however, united all the advantages which the wisest and most philanthropic philosopher or the most enlightened legislator could wish to derive from foreign trade. It gave bread to the industrious in North America, by carrying off their lumber which otherwise must have rotted on their hands, and their fish, great part of which without this vent would have been unsaleable, together with their surplus produce and stock of every kind; it furnished the West India planters with those articles without which the operations on their plantations would have been at a stand; and it produced a fund for employing a large number of manufacturers in Great Britain: thus taking off superfluities, providing for necessities, and promoting the happiness of all concerned. The colonists were justly aggrieved; they thought themselves proceeded against as delinquents, or as people suspected of delinquency, and in such a manner as their services in the late war did not merit. But the British government, egotistical and infatuated, persevered in this suicidal course, and soon exhibited more lamentable proofs of political insanity. But here we must pause.

No. III.

The next irritating measure of Great Britain was to raise revenue by direct internal taxes. This roused a very general resistance among the colonists, as their natural, chartered, and constitutional rights were now undisguisedly assailed; nor could they forget that during one hundred and sixty years they had been allowed to tax themselves as they pleased. Up to this date England had, indeed, taken the raw produce of the colonists, and compelled them to take her manufactures; and this principle of commercial monopoly had been enforced by no less than twenty-nine acts of parliament from 1660 to 1764, but during the whole of that period no attempt was made by the mother-country to extract a parliamentary revenue.

At the peace of Paris, in 1763, the National Debt of Great Britain amounted to one hundred and forty-eight millions, for which an interest of nearly five millions was annually paid. The Finance Minister was embarrassed; and, as the English chafed under this heavy pressure, he resolved to recruit his exhausted treasury from transatlantic sources. It was, he said, reasonable that the colonies should pay a proportionate amount of the expenses of the late war, which had been mainly undertaken on their account, and from which they had derived immense advantages. The colonists did not object to the equity of the proposition, but insisted that, whatever their contributions might be, they should be voted by their own representatives in their colonial assemblies, and not imposed by a parliament in which their voice was never heard. It must be confessed that the English minister was supported in his plans by public opinion at home—first, because general taxation would have fallen more lightly on the inhabitants of the mother country; secondly, because the British, educated in habits of parliamentary taxation, were indignant at what they regarded as the contumacy of the colonists, who refused to obey an order which they deemed both lawful and supreme. The disputants then examined the charters, and interpreted them so as to uphold their pre-conceived opinions. A clause in that granted to Mr. Penn ran thus:—"That the emigrants to America should enjoy the same privileges as if they had remained, or had been born, within the realm." On this the English contended that the emigrants would have been taxed by parliament had they remained within the realm; and that the mere circumstance of their living in America, still enjoying English privileges and English protection, did not exempt them from the fiscal obligation. It was answered, that in the charter granted to Maryland it was expressly stipulated, and King Charles bound himself and his successors to the stipulation, that "the inhabitants should never be subjected to internal taxation by external legislation." Then the principle of virtual representation was mooted, and other subtleties and equivocations; and while these were urged on both sides with more heat than wisdom, resolutions were passed in parliament imposing a stamp duty on America, thus formally proclaiming the principle of colonial taxation by the authority of the British legislature. This happened in March, 1764. In the following year Mr. Grenville brought a bill into the House of Commons founded on those resolutions. It passed both houses; and on the 22nd of March, 1765, received the royal assent. The night afterwards, Dr. Franklin, then in London, wrote to his friend Mr. Charles Thompson—"The sun of liberty is set; you must light up the candles of industry and economy." Mr. Thompson answered—"I am apprehensive that other lights will be the consequence."

When the news reached America, the loudest indignation was manifested. Virginia led the way in opposition, Mr. Patrick Henry moving a series of resolutions, in the house of burgesses in that colony, which were carried. These denounced the Stamp Act as illegal, unconstitutional, and unjust. The example was everywhere followed, accompanied by disturbances of so serious a character as to alarm the ministers. Lord Camden in the House of Lords, and Mr. Pitt in the House of Commons, opposed the policy of Mr. Grenville. The former said: "My position is this, and I repeat it, and will maintain it to the last hour: taxation and representation are inseparable. This position is founded on the laws of nature. It is more—it is itself an eternal law of nature; for whatever is a man's own, is absolutely his own. No man has a right to take it from him without his consent. Whoever attempts to do it, attempts an injury; whoever does it, commits a robbery." Mr. Pitt was equally energetic: "You have no right," he said, "to tax America. I rejoice that America has resisted. Three millions of our fellow-subjects, so lost to every sense of virtue as tamely to give up their liberties, would be fit instruments to make slaves of the rest." He advocated the total, immediate, and unconditional repeal of the Stamp Act, but at the same time ennunciated the following doctrine: "Let the sovereign authority of this country be asserted in as strong terms as can be desired, and be made to extend to every point of legislation whatsoever, that we may bind their trade, confine their manufactures, and exercise every power except that of taking money out of their pockets without their consent." Thus, on all matters but one, Pitt showed himself a despot. However, on the 18th March, 1766, the Stamp Act was repealed. This gave great satisfaction. The ships in the Thames displayed their colours, and the city of London was illuminated.

On repealing the odious law, Parliament enacted another measure, which was, in fact, still more hostile to American liberty. It was styled "The Declaratory Act." To soothe the mortified pride of England, which had been reluctantly compelled to draw back the arm it had unwisely stretched forth, the resolutions and acts of the provincial assemblies, in which they had asserted their right to be exempt from imperial taxation, were annulled; and a clause was inserted to the effect "that Parliament had, and of right ought to have, power to bind the colonies in all cases whatsoever." The Americans, however, exulted in their triumph; their resistance had been successful, and already many were determined to achieve their commercial and trading independence. The more enthusiastic exclaimed, "Shall the petty island of Great Britain, scarcely a speck on the map of the world, control the free citizens of the great continent of America?" In this there was more bombast than sense; but England, as if impelled by fatality, could not abandon the pernicious scheme of drawing revenue from the colonists. In 1767, Mr. Charles Townsend, afterwards Chancellor of the Exchequer, brought a bill into Parliament for granting duties in the British colonies on glass, paper, painters' colours, and tea, which was afterwards enacted into a law. Here, again, the principle of taxation without representation was involved; and the Americans, looking at the pertinacity with which this form of legislation was persevered in, saw plainly that if the small end of the wedge was introduced, the whole would be quickly inserted. The assemblies again protested. On the 10th June, 1768, the sloop Liberty, belonging to Mr. Hancock, a very popular man, was seized by the Royal Commissioners for not having entered all the wines she had brought from Madeira. They were so roughly handled that they nearly lost their lives, and went on board the Romney man-of-war for protection. Her Majesty's Government then ordered two regiments and some armed vessels to be stationed at Boston, which still more exasperated the people. Boston then proposed a convention to discuss grievances, to which ninety-six towns and eight districts responded, and irritation became intensified.

In England the rashness of the legislature was pushed to the extreme. Ministers determined to punish all who had resisted the law in Massachusett's Bay. In 1769 both houses of parliament resolved on supporting the prerogative; and, in the excess of their loyalty, beseeched his Majesty to direct the governor of the province "to take the most effectual methods for procuring the fullest information touching all treasons or misprisons of treasons committed since the 30th December, 1767, and to transmit the same, together with the names of the persons who were most active in the commission of the said offences, to one of the secretaries of state, in order that his Majesty might issue a special commission for inquiring into, hearing, and determining the said offences within the realm of Great Britain, pursuant to the provisions of the statute of 35th of King Henry VIII." This arbitrary proposition added fuel to the flames. In Virginia and North Carolina both houses of burgesses protested against this deportation of the colonists to London, to be there tried by a strange judge and a strange jury: the governors dissolved both. The members then met as private citizens, and resolved on what was called the "non-importation agreement," by which all goods brought from Great Britain were to be excluded. So important had the American trade now become to British manufacturers, that the latter petitioned parliament to repeal the Act of 1767, as an inducement for the colonists to rescind their non-importation agreement; and Government, ever wanting in firmness and foresight, gave an assurance that it would abolish all the duties, excepting that of 3d. per pound on tea. Here, again, the old error was repeated, for the retention of this paltry tax still kept alive the disputed principle; however, the concessions made produced a temporary calm, and British goods were allowed to be imported.

On the 9th May, 1769, in the Royal speech to parliament, the King applauded the loyalty of parliament. Five days afterwards Lord Hillsborough, Secretary of State for the Colonies, wrote to Lord Botetourt, governor of Virginia, that all duties in America would permanently cease, and urged him to conciliate the colonists. The governor convened the Virginian assembly, and communicated the message, which was enthusiastically welcomed. With the exception of Massachusetts all the provinces now hoped that good feeling and harmony would be restored; but Massachusetts remained distrustful because the troops were not removed from Boston. Soon a collision took place between the soldiers and the citizens; three of the latter were killed, and five wounded. The military were tried, and two were found guilty of manslaughter; but the tragical event was never forgotten.

The British Government soon committed fresh blunders. Hitherto the governor and judges in Massachusetts had been paid by yearly grants voted by the assembly; it was now decided they should be paid by the Crown. This innovation was construed as a direct blow aimed at provincial independence. The tea duty of 3d. per pound still remained. Three ships laden with tea arrived at Boston; it was thrown into the sea. This happened in 1773; and in the same year parliament enacted that paper bills of credit should cease to be a legal tender throughout the colonies. General Gage arrived from England as governor of Massachusetts, and in 1774 fortified the neck of land which joins the town to the continent. Now the sword was drawn: the provincials and regulars fought at Lexington. In 1775 the American congress first met at Philadelphia. In 1776 America was declared an independent kingdom by congress. On the 30th November, 1782, the provisional articles of peace were signed between Great Britain and the United States, at Paris. Those articles were ratified by a definitive treaty, dated 3rd September, 1783. Thus we lost our noblest possession, through the dogged obstinacy of King George the Third and the infatuation and imbecility of his incompetent ministers.

The leading men in America were loyal to the last and most anxious to remain united to Great Britain. Even so late as May, 1775, the Congress at Philadelphia called upon all America to join in beseeching the Almighty to avert the judgments with which they were threatened, and "to bless their rightful sovereign that so a reconciliation might be brought about with the parent state." In the instructions delivered, 9th Nov., 1775, by a committee of the representatives of the province of Pennsylvania to their delegates, they enjoin them "utterly to reject any propositions, should such be made, that might lead to a separation from the mother country." Some of the letters written by the colonists to their friends in England are very decisive as to the real state of feeling in America. A few extracts are given below, from the correspondence collected by Dr. Richard Price. "I am sensible of the many artifices and falsehoods which have been used to bias the minds of your countrymen, who believe evil reports of us, and particularly that we are aiming at independence. Of this be assured, that even Hancock and Adams are averse to independence. There was a lie current last week, that the Congress had finally agreed upon independence, to take place the 10th March next (1775), should not our grievances be redressed before that time. I wrote to one of our delegates to inquire whether this report was true. In his answer, he declares on his honour that he believed there was not one man in the Congress who would dare to make a motion tending to independence; or that, if any one did, two could not be found to support the motion. None but those who are on the spot can conceive what a spirit has gone forth among all ranks and degrees of men. We deserve to be free. It is a heavy sacrifice we are making. Trade is at an end. We expect our city to be knocked about our ears. But I solemnly declare, I will submit to all, and die in a log-house in the wilds of America, and be free, rather than flourish in servitude."

All that the colonists asked, was to be restored to the position in which they were at the conclusion of the war in 1763. On those terms they were eager to return to their allegiance. In many documents they declared they loved and honoured the king. There is one document, however, little known to general readers, preserved by Dr. Price, too remarkable to be here omitted. In a committee of Congress in June, 1775, a declaration was drawn up, containing an offer to Great Britain "that the colonies would not only continue to grant extraordinary aids in time of war, but also, if allowed a free commerce, pay into the Sinking Fund such a sum annually, for one hundred years, as should be more than sufficient in that time, if faithfully applied, to extinguish all the present debts of Britain. Or, provided this was not accepted, that, to remove the groundless jealousy of Britain that the colonies aimed at independence and an abolition of the Navigation Act—which, in truth, they had never intended—and also, to avoid all future disputes about the right of making that and other acts for regulating their commerce for the general benefit, they would enter into a covenant with Britain that she should fully possess and exercise that right for one hundred years to come."

This outline of the colonies before they became independent, and of the causes which led to the separation from the mother-country, appears to be an appropriate introduction to an inquiry into the national resources of the United States. On comparing the former with the later period of their history, it will be seen that their rapid and extraordinary progress is mainly due to their free institutions. Downing-street was always checking their progress through ignorant restriction. The Colonial Minister knew nothing of the capabilities of the country, and was ruled by his nominees as ill informed as himself. England wished to govern so as to exact tribute for herself, quite regardless of the welfare of America. Its enormous territory was not utilized. There was no continuity of system, as each change in the English ministry was followed by some new caprice of legislation. The union of the colonies as an independent kingdom was followed by combined action in every department of industry, and from that date the sources of industry were rapidly developed throughout the whole continent.

EXPORT OF BRITISH CATTLE TO THE UNITED STATES.

It has been our pleasing duty on several occasions during the last few years to place on record facts illustrative of the growing importance abroad which is being attached to the possession of the best and choicest breeds of cattle of which the United Kingdom can boast. This feeling augurs well not only for farmers and breeders of neat stock, but for the country at large; and it is therefore a source of national satisfaction to see how highly such are prized. During the past week there were shipped from Liverpool for New York, on board the "Antarctic," Captain Stouffer, a most valuable cargo of horses, cattle, sheep, and pigs; the arrangements for which were such as might have afforded our facetious friend *Punch* scope for his witty pen, to see how highly-favoured a daughter of Master Butterfly (so honoured in his columns) was placed in the poop of this splendid ship, the captain of which has so distinguished himself for his bravery and humanity as not only to receive the thanks of his countrymen, but other and more substantial marks of their gratitude for his heroic conduct.

Prominent amongst the cattle was a young cow called Darlington 6th, by a son of Grand Duke. She was bought at Mr. Sainsbury's sale, in August, for 300 gs. Another very fine heifer, Marie Louise, by Mr. Booth's Hopewell, purchased at a recent sale in Ireland. There were also three first-class heifers from the unrivalled herd of Colonel Towneley, of Towneley Hall, in Lancashire: Buttercup 2nd, by Horatio from Rosette; Miss Butterfly, by Master Butterfly from Rosa; and Pearlette, by Falcon from Ringlet. The price given for these three heifers was 1,000 gs., although only just turned one year old. Two of them are descended on the dam's side from the same family as the famous bull Master Butterfly, which animal was sold for Australia, in July, at 1,200 gs. Miss Butterfly was the first heifer-calf by him. Pearlette is descended from Mr. Booth's Bracelet, one of the most celebrated prize cows of her day; and for the dam of this heifer Mr. Douglas recently gave Mr. Towneley 500 gs. These animals have been purchased by Mr. Strafford, of London, for Mr. Thorne, of New York, one of the most enterprising breeders of that country.

There were also consigned for this gentleman, some very fine Southdown sheep, purchased at the Hengrave sale, as well as some of the best Berkshire and Essex pigs that we ever saw leave the port of Liverpool. The Berkshires were from the famed stocks of Mr. Hewer and Mr. Overman; the Essex pigs were bred by Mr. Crisp, and included the prize boar at Chelmsford, as well as some young sows also shown there.

With the above there were also shipped some splendid Southdown sheep from Mr. Lugar's flock, as well as the shearling ram bought at his sale for 80 gs. These are for Mr. R. A. Alexander, of Kentucky, a gentleman whose name stands high as a great purchaser of our best animals, and who in a recent visit to this country, bought the celebrated horse Scythian by Orlando, winner of the Derby (by Touchstone), one of the best stallions this country ever produced, whose pedigree and performances are well known in the sporting world. He was winner of the following prizes: Newmarket Stakes, £350; Dee Stakes, Chester, £750; Goodwood Stakes, £950; the Newmarket Royal Stakes, £1,240; the Chester Cup, £2,775; Stockton, £530; Goodwood, £539. This valuable horse, for which Mr. Alexander gave 1,500 gs., accompanies the above cattle, under the charge of Mr. Beck, and is consigned through the Messrs. Tattersall.

Some cattle and sheep were also sent by Mr. Wythes, for a house in New York. The entire arrangements for the shipment were made by Mr. Bell, of the Adelphi Stables, and were of the most complete character, being such as to reflect the greatest credit upon the care and attention of this gentleman.—*From a Correspondent.*

CHICAGO THE GREATEST GRAIN PORT IN THE WORLD.

The rapid growth of states and towns in the American union is the subject of wonder and astonishment, and exceeds everything that has before been known in history. No sooner is the settlement of a tract of country determined on, than, with an instinct peculiar to the people of America, the most eligible sites are at once selected for the principal commercial towns, to which the new colonists flock. Not in fives or tens, as was formerly the case, but in hundreds and thousands; who, carrying with them the energy and promptness of their race, at once establish themselves, and devote their time and means to the construction of facilities for taking their produce to the best markets.

We have a notable instance of this feature in American migration, in the history and progress of the town of Chicago, to which the attention of commercial men in this country has been recently and specially directed. This affords a highly favourable specimen of that extraordinary rapidity with which a commercial town rises up in the United States wilderness; not, be it observed, as an ephemeral or temporary accommodation, but as a permanent and organized community and municipality, founded upon the most solid and rational basis, and exhibiting in its gigantic growth all the marks of health and vigour.

We scarcely know in what year Chicago first assumed the character of a town—we believe about thirty years ago; but we have now before us the "London General Gazetteer," published in 1825, and neither in the map of the States nor in the text is the place mentioned. We may therefore conclude that thirty-five years ago Chicago was scarcely in existence—beyond perhaps the erection of a few log-huts, the usual precursors of the towns in that country.

The town and port of Chicago are situated at the southern extremity of Lake Michigan, and at the mouth of the river of that name. It lies in latitude about 42° North, and longitude about 86° West; and stands, therefore, in about the centre of the Cereal Zone or Belt, most favourable for the cultivation of wheat and maize. It belongs, we believe, to the State of Illinois, having the command, by navigable rivers and other communications, of the boundless prairie countries of Michigan, Illinois, Missouri, and Indiana, all grain producing districts, fast filling up with an energetic and prosperous population, and embracing an extent of territory of upwards of 230,000 square miles, or nearly 150,000,000 acres, chiefly free from timber, and possessing a deep alluvial soil of the richest quality.

Its position at the head of Lake Michigan gives it the command of an inland navigation unparalleled in any other part of the globe, and fitting it for becoming the grand *depôt* of agricultural produce of the "far West." Nor have the merchants who have settled there failed either to avail themselves of the facilities thus afforded them to take that produce to market, or to provide accommodation for the storage of grain. As an instance of this, we may state the case of Messrs.

Gibbs, Griffiths, and Co., who have built a grain warehouse, reaching from the dock to the railroad track, a distance of 190 feet; the river front being 60 feet wide, and that on the railroad 110 feet. Its height of wall is 62 feet, but it has two cupolas 100 feet high, which contain the weighing apparatus. Sixty-six bins, holding 5,000 bushels each, occupy the first storey, all braced in the strongest manner to sustain the lateral pressure. Two shipping bins contain 12,000 bushels each, and the ground floor allows ample space for storing and rolling 50,000 barrels. The upper storey contains the conveniences for drying grain, and also receives and stores grain in bags. At a moderate estimate, this warehouse will store half a million bushels of grain, received on the land side by four elevators, which can unload 10,000 bushels per hour. On the river side one elevator lifts from the canal boats at the rate of 3,000 bushels per hour; while in the same period into the vessels may be poured 8,000 bushels. A low-pressure steam-engine of 100 horse-power governs all the movements, and the entire establishment is constructed as strong as wood, iron, and brick can make it; the whole being covered with a sheet-iron fireproof roof.*

By a letter inserted in *The Times* paper of Wednesday last, evidently written by a gentleman intimately acquainted with the subject, the grain trade of the western ports has risen from 1,341,393 bushels in 1835, to 17,033,931 bushels in 1853, that quantity having passed the Welland Canal lock at Buffalo. The two last seasons were below that amount, owing to the partial failure of the crop of 1854. "Under the accelerated ratio of increase," says the writer referred to, "in the productions of the west, the export of wheat, flour and corn, large as it has already become, may be expected to double in the next ten years. The gross quantity would then amount to 34,000,000 bushels."

Hitherto the bulk of this large export of grain has passed through New York in its transit to the European market; but the recent passage of the "Dean Richmond," laden with grain, by way of the St. Lawrence, has given rise to a belief that this passage affords advantages superior to those *viâ* New York, either in respect to the time occupied in the voyage, the expense of lockage, transhipment, &c., and the condition of the grain upon arrival in Europe.

It now, therefore, becomes a question of competition between the two lines of route, whether the produce of the West is to reach Europe by the New York exit or by that of the St. Lawrence.

At present there is an opinion that, notwithstanding the inconvenience of two transshipments, one at each end of the Erie Canal, the New York will be able to outbid in advantages the St. Lawrence route. The expense of transshipment is not more than one-tenth of a penny per bushel, and barrels in proportion; whilst the distance, when everything is taken into the account, is not much greater by one than by the other. That the New York route, under present circumstances, is the best, we have *primâ facie* evidence in the fact that nearly all the produce shipped from Canada West and Chicago passes that way, although the parties most interested in the St. Lawrence route have made great exertions to render it commodious. All, however, has up to the present time failed to draw the traffic in that direction; and in 1855, of produce to the value of £2,932,696 sterling exported from Canada West, £2,679,414 passed by way of New York, the small remainder of £253,282 being shipped by way of the St. Lawrence.

When, however, the network of railway now in progress is completed in Canada, it will materially alter the face of things, at least so far as the produce of Upper Canada is concerned. In that case it is, we believe, intended to make Hamilton and Toronto—the former at the extremity of Lake Ontario, and the latter on the western shore—the grand depôts for the cereal produce of Canada West, instead of Chicago and Buffalo as at present; and from these ports the transit by rail will afford facilities to convey it to any point of the eastern seaboard, whether on the line of British America or that of the United States.

It will afford some illustration of the enormous increase of produce traffic if we state that a few years since, the Welland Canal, connecting Lakes Erie and Ontario, was found to be inadequate to the traffic, and it was consequently enlarged to such an extent, as was then believed, to enable it to meet the increase of traffic for the following fifty years at least. But such has been the accumulation, that it is already found totally unable to meet the demand for transit; and a vessel which formerly passed through in from twenty to thirty hours is now detained a whole week. A line of vessels a mile in length may be seen at once; and there being only one lock passage, it may be conceived how tedious a process it must be to pass through them all.

Whether, however, we receive our supplies by way of New York or by the St. Lawrence, one fact is clear, that it is to Western America that we must in future look for the largest amount of cereal produce. The province of Upper Canada will in future furnish increasing quantities of wheat and flour; whilst the Western States of the Union, with their gigantic proportions, will yearly pour forth of their superabundance, receiving in return the manufactures of Europe—as much needed by them as their wheat and flour are by ourselves. This reciprocal exchange is the surest and best guarantee against the influence of that war-spirit which good policy should stay either of us from encouraging.

On the 15th of January, 1855—that is, nearly two years since—there appeared in the columns of the *Mark Lane Express* the following article from one of our own correspondents, on the extraordinary capabilities of Chicago as a grain depôt for the supply of this country. He wrote thus:—

"In the progress of our city, and of the west generally, facts of the most astounding character not unfrequently come upon us unawares, and before we are prepared for them. If any one had asked us two days ago which of the great grain depôts of the world (depôts at which grain is collected daily from the producer) was the largest, we probably would have named half a dozen before hitting upon the right one. If the same question were put to each of your readers this morning, we doubt if any one of the whole number could answer it correctly, nor do we believe that any one of the whole number would credit the correct answer to the query, unless it were sustained by an array of figures the truth of which could not be questioned. Our attention was called to this subject yesterday by a gentleman engaged in the grain business in this city, and with his assistance we have given it a thorough investigation, *the result of which, greatly to our surprise and gratification, establishes the supremacy of Chicago as a grain port above all other ports of the world!* That there may be no ground for incredulity we proceed to lay before your readers the statistics, gleaned from authentic sources, which confirm this statement. In the table which follows we have in all cases reduced flour to its equivalent in Wheat, estimating five bushels of the latter to one sack of the former. The export from the European ports are an average for a series of years—those of St. Louis for the year 1853, those for Chicago and Milwaukie, for the current year, and those for New York are for the past eleven months of the same year. With these explanations we invite attention to the following table:—

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* See the "Hand-Book of Agriculture," p. 29.

	Wheat, bush.	In. Corn. bush.	Oats, Rye, and Barley.	Total quarters.
Odessa ……	5,600,000	—	1,440,000	880,000
Galatz & Ibraila	2,400,000	5,600,000	320,000	1,040,000
Dantzig……	3,080,000	—	1,328,000	546,000
St. Petersburg.		all kinds		900,000
Archangel….		,,		316,000
Riga ……..		,,		500,000
St. Louis ….	3,082,000	918,384	1,081,078	635,125
Milwaukee ..	2,723,574	181,937	841,650	451,323
New York….	5,802,452	3,627,813	—	1,178,789
Chicago ……	2,946,924	6,745,588	4,034,216	1,715,840

"By comparing the exports of the different places mentioned in the above table, it will be seen that the grain exports of Chicago exceed those of New York by 4,296,393 bushels, those of St. Louis by more than two hundred and fifty per cent., those of Milwaukie nearly four hundred per cent. Turning to the great granaries of Europe, Chicago nearly doubles St. Petersburg, the largest, and exceeds Galatz and Ibraila, combined, by 5,406,727 bushels.

"Twenty years ago Chicago, as well as most of the country from whence she now draws her immense supplies of breadstuffs, imported both flour and meat for home consumption; *now she is the largest primary grain depot in the world, and she leads all other ports of the world also in the quantity and quality of her beef exports!* We say the largest *primary* grain depôt in the world, because it cannot be denied that New York, Liverpool, and some other great commercial centres, receive more breadstuffs than Chicago does in the course of the year; but none of them will compare with her, as we have shown above, in the amount collected from the hands of the producers.

"What a practical illustration the above facts afford as to the wonderful, the scarcely credible, progress of the West! what an index it furnishes to the fertility of her soil, and to the industrious and enterprising character of our people! what a prophecy of the destiny that awaits her when every foot of her long stretches of prairie and her rich valleys shall have been reduced to a thoroughly scientific tillage! How long, at this rate, will it be before the centre of population and of wealth will have arrived at the meridian line of our city, and Chicago will have vindicated her right to be recognized as the great commercial metropolis of the United States? We verily believe such is the destiny that awaits her."

We paid our correspondent the best compliment we could by inserting his article as he forwarded it to us. Notwithstanding the boldness and novelty of the announcement, we felt that he would not speak without sound data to go on. And now, within some eighteen months or so, his prophecy appears about to be fully realized. Let our readers learn how thoroughly all he said is confirmed in the following article from the *Liverpool Daily Post* of last week:—

"It is only within the last week that a most important question has been solved, one which has deservedly received great attention on the other side of the Atlantic, viz., Whether it is practicable and profitable to carry on a direct trade between Chicago, the *ultima Thule* of the American Lakes, and this country, without transshipment or forwarding *via* Buffalo and New York, the course hitherto generally adopted. Experience proves not only the feasibility but the benefits of this through traffic. There is now in the Queen's-dock a vessel of 387 tons burden, the Dean Richmond, which has not only made the passage from Quebec, but has traversed 2,400 miles of inland water, bearing a cargo of 400 tons of grain, the first vessel and the first cargo which ever arrived here direct from Chicago, opening a new field for commercial enterprise, and marking an important epoch in the annals of the Far West.

"Nor is it a matter of local importance, or likely to result in the benefit of American interests only, else we should not refer to it. World-wide advantages may follow. Great benefits to us must arise from the success of this plan. Whatever conduces to cheapen food, facilitate its delivery, and increase its supply, must be to the general good; and the arrival of the Dean Richmond gives promise of being the forerunner and opener of a trade which will produce the above results.

"That we may not be supposed to have overrated the importance of Chicago, it may be as well to state a few facts with reference to the trade with that port. The population, in 1850, was 29,000; in 1856 it has increased to 104,000. The shipment of grain in 1855 was 2,200,000 quarters, being the largest quantity shipped from any one port in the world; pork, 77,000 barrels; beef, 56,000 barrels; imports, 40,000 tons of iron, 110,000 tons of coals; lumber, 325,000,000 superficial feet; arrivals, 6,610 vessels of 1,608,845 tons. The port possesses storage in warehouses for 500,000 quarters of grain, at which 400-ton vessels have been loaded in four hours. We are indebted to Mr. Richmond and Captain Pierse, the owners of the Dean Richmond, for these statistics.

"It should not be forgotten that all this trade was carried on under the disadvantageous circumstances already referred to, all these vessels laden merely to be discharged into others, not one having come direct to Great Britain but the Dean Richmond. To what vast proportions may not such a trade be extended, when provided with greater facilities! Have we not all cause to hope that the experiment, so successfully brought to a close, may eventuate in a constant communication, to the mutual benefit of all?

"The North Western States, with their great railway and canal facilities, can lay down at the lake ports larger quantities of grain, at a less cost, and deliver the same in England in a shorter time than the countries on the Black Sea. Hitherto, as we have stated, the trade has been carried on *via* New York, the goods passing through three or four different hands, ere they reached England, each change entailing a commission besides loss of time, and three several freights—in the aggregate amounting this season to 13s. 8d. per quarter, with an unusually low rate of carriage to Buffalo. The Black Sea freights at present are 13s. per qr., and the usual voyage from Galatz 70 to 100 days. The Dean Richmond has made the entire passage in 60 days, including 12 days' detention in the St. Lawrence, which would not be likely to occur again; vessels, therefore, may be expected to make the run in 50 days, while a vast saving in expense will be gained, the freight and charges being less by several shillings than *via* New York or from the Black Sea. The canal dues on a cargo of 400 tons and the ship amount to 30*l.*, and steam-tugs 30*l.* more; there are no port charges, light dues, or pilotage on the Lake, and therefore the saving of commissions and freight is not counterbalanced by other imposts.

"Another important matter is the improved condition of the grain which a direct trade would secure. At present the Liverpool merchants complain with justice of the state of the Western grain when received *via* New York and Montreal, in large ships. That now discharging from the Dean Richmond is in as good condition as when shipped, thus showing the advantage of the direct trade in vessels of 300 to 400 tons.

"Nor should it be forgotten that the West requires the manufactures of Great Britain. Our iron, hardware, earthenware, &c., are imported *via* New York—imports, like exports, passing through several hands, increasing cost and occasioning delay. These goods could be imported direct, to the benefit of all concerned.

"And now for a few words respecting the vessel, which, with the cargo, came consigned to Messrs. Bigland, Athya, and Co., of this port. The Dean Richmond is a fore-and-aft schooner of 380 tons register; her length is 145 feet over all; beam 26 feet; depth of hold 12 feet. She drew 9½ feet with 400 tons of wheat in her, and has beaten many vessels from Quebec by two and three weeks. The Dean Richmond is built entirely of oak, except the decks, and is fitted with a new centre-board, which in deep water gives her a draught of 18 feet. She has immense spars for her size, and altogether has a very rakish appearance. At present she is the largest vessel which can come through the canals; but by a moderate outlay upon them we are given to understand ships of 800 to 1,000 tons could easily be admitted."

It is scarcely possible to over-rate the importance of this communication. The four great points in a further supply of food to the people, appear now to be all fully provided. An immense depôt to draw from—a great saving of time in the transfer—a proportionate economy in the carriage—and an improved condition in the article itself. There can be no doubt about these facts. They are fully established in the arrival of the Dean Richmond. It is only a question, indeed, whether this performance may not be even yet further improved upon. If not, this is of itself sufficient to furnish a new era in the conduct of the corn trade of the world; and as such we call to it the best attention of our readers. With a pardonable egotism we may repeat, that an announcement in other quarters so startling has not come on us either unawares or unexpected. We shall of course return again to the consideration of so vital a topic to us all. In the interim, we may add the following deduction from the *Times* of Saturday:—

"All this means nothing less than a great revolution in the grain trade, which has hitherto been far too much in the hands of the Greek houses. Let any one be at the pains of turning to a map of North America, and let him mark the position of Chicago as an entrepôt for the grain States. It lies in their very heart, and from this town to Liverpool the traffic can be so arranged that it will undersell the Black Sea trade and force it to reduce its freights. From Lake Michigan into Lake Huron, from Lake Huron into Lake Erie it is an open navigation. At the western extremity of Lake Erie we come upon the Welland Canal—this canal is but short—through which a ship passes into Lake Ontario, and from that point her run is free down the St. Lawrence into the Atlantic and to a British port. Were Detroit or some other port at the western end of Lake Erie chosen as the point of departure, in place of Chicago, at the foot of Lake Michigan, there would be a gain of ten days upon the run. The distance between the two points is inconsiderable by land, but by water there is a necessity for circumnavigating the whole peninsular of Michigan. Of the objections to this suggestion we are unaware; they can only be propounded by local experience. The position, however, of Chicago, is favourable enough to enable it to drive all competitors out of the field, even if no better can be chosen. This change in the direction of the grain trade is one which we regard with peculiar satisfaction; for, as one of its collateral consequences, it will help our Canadian fellow-subjects to carry out their project of a well-organized communication (by steamer) between Quebec and Liverpool. The St. Lawrence, backed as it is by that magnificent series of inland seas, ought to be the high road from Europe into the heart of the North American continent. Whatever lies in our power to arrive at so desirable a conclusion, we are bound by every tie of interest and patriotism, of affection and policy, to perform. The log-book of the Dean Richmond will, we trust, prove a notable addition to the records of the Canadas."

THE TRADE OF CHICAGO IN 1856.

Sir,—In the last *Express* you noticed the grain exports of Chicago for 1854, with some excellent extracts from an article in the *Liverpool Daily Mail* (furnished by Messrs. Richmond and Pierce, large shipowners, of Chicago), as well as from the *Times*, on the direct trade between the Great West and Great Britain, of which the Dean Richmond was the pioneer.

The state of the trade for the present year, to September 3, may interest your readers.

Grain.—Great as the exports of grain were last season, they will be nearly 3,000,000 qrs. this; the excess to September 3 being 203,000 qrs. of corn, and 137,000 qrs. of wheat. Shipments: 1854, 1,715,800 qrs.; 1855, 2,200,000; 1856, about 3,000,000 qrs.

Hogs.—Receipts in 1855 302,000 qrs. (being double those of 1853), of which half were sent dressed to New York, Albany, Boston, &c., to be packed at those cities or for consumption. When frozen, they keep six or eight weeks, but if there be any detention by railroad in the spring, great losses occur. Many hogs sent alive to New York were frozen in the cars. The number for this season will be from 400,000 to 450,000.

Beef.—28,972 cattle were packed in 1855, averaging 572lbs. A great number was sent east by rail and steam.

Timber.—The imports this season will be, in tons, about 1,000,000; exceeding any port in the States, and equalling Quebec. Large quantities of lumber come from the Canadas; some from the Ottawa, and from the Three Rivers below Montreal: sent by canal and rail through the western States and down the Mississipi.

The prices of grain on September 3, free on board, were for Indian corn 16s., white wheat 45s., red winter do. 40s., and spring do. 35s.; with freights to Liverpool 10s., or Cork and a market 11s. to 12s. per 480lbs.

Chicago bankers will not do any corn or provision bills on English houses, so that bankers' credits are indispensable. Branches of British or Canadian banks, for British and colonial interests, are required. Rates of interest on bills on New York, with BL. at 30 to 40 DD., 10 per cent.; out-door rates on local paper are 18 to 36 per cent.

For the provision trade the Canadian Steam Company should arrange for a bi-weekly line of propellers to Montreal (at present they run to Ogdensbury, only 140 miles distant), and give bills of lading all through. The London and Montreal Steam Company should do the same.

A ship canal from the Ottowa to Lake Huron would shorten the distance from tidal water to lakes Superior and Michigan one-half.

Too much attention cannot be given to the letter of the Hon. John Young, which appeared in the *Times*, on the present mail arrangements between Great Britain, the United States, and Canada, so injurious as at present carried out to Canadian interests.

Excuse this long letter from

Your obedient servant,

Dublin, Sept. 30. W. Kernaghan.

THE HOMESTEAD.

There are few things more essential to, or more intimately connected with, the comfort and well-being of the agriculturist, than having his homestead good, well arranged, and suitably adapted to the peculiarities of his farm. Drainage — but not the drive-all-before-you system of, in every case and under all circumstances, 4 feet deep and 33 feet apart, a system very convenient, a good thing, quite a *bon-bon* for gentlemen yclept Government inspectors, who find it necessary once or twice a year to take a tour into the country, recruiting at the same time both health and purse, the while regaling on the best cheer titled wealth (who is weak enough to be gulled by a smooth tongue and specious flattery) can offer them—drainage, we say (but not such as is generally done under the direction of the aforesaid gentlemen), is the foundation on which must rest all good and profitable husbandry. But it does not avail much investing capital in raising superior crops if the homestall be inadequate to render their consumption a matter of profit. It is a fact, and needs no repetition here, that animals, when exposed to cold, require a much larger quantity of food to keep their systems in healthy action than others not so exposed. On the other hand, cattle confined in a close and vitiated atmosphere are found rarely, or never, long to enjoy good health. Hence arises the necessity that sheds, boxes, or houses must not only be warm, but the cattle must have a supply of pure air—the houses must be well ventilated. If, then, the farmer lays out his capital in thorough drainage, artificial manures, and improved culture, and thereby is enabled to grow "two blades of grass," or twenty tons of roots, where one or none grew before, surely it is only a matter of right and justice to erect him buildings where he can profitably consume his roots and live in comfort himself. For some time back the demand for and increased value of farm produce has been great; leading to the assumption that farmers' profits have been cent. per cent. Consequently, the biddings for holdings have been spirited; and in some parts of the country, farms with the most wretched homesteads have let at, indeed, war prices. But we feel assured that, should ever farming get to discount, and with wheat at 40s. a quarter, increasing intelligence on the part of the tenant-farmers will render a matter of some difficulty the letting of farms where the buildings are not suitably adapted to the wants of the times. Taking the country generally, it is evident that the erection of farm buildings has not progressed with the same spirit of improvement noticeable in other departments of agriculture. Witness Tiptree Hall, where a visitor from the North, after lauding the many scientific improvements brought about by the spirited proprietor, goes on in the columns of the *Times* to note the "indifferent condition of the farm buildings."

Their first erection is ground (as far as cost is concerned) on which the tenant ought to stand neutral, but will afford ample scope for the judgment and skill of the proprietor, his agent, architect, and tenant, in the way of planning, laying out, and constructing. And here we would urge on proprietors the ample necessity for the employment, in all large buildings, of an architect, or some other person conversant with the minutiæ and detail of builders' work. False economy in this may issues in very disastrous results. In reasoning thus, we do not wish to imply the necessity for the total giving up of the works to the care of the architect, in such a way that he "may scorn advice and despise control." None can be so well qualified as the tenant and practical agent to know what is the best plan for their farm, and to them should be intrusted the laying out and sketching for the same. We only advise an architect, or other competent person, to see the work performed in proper manner. We have read the speeches of gentlemen's agents, boasting of the spirited manner in which they went to work on their master's estates, erecting suites of buildings on farms of 800 and 1,000 acres, at a cost of £6,000 to £7,000; an evidence, certainly, of the wealth and credulity of the "Squire," and also affording a fair glimpse of their own peculiar taste; but, we would say, a very reckless waste of that very useful and potent article—cash! For a sum considerably below the half of the afore-mentioned, buildings for such an extent of holding could be erected, replete with every modern appliance and convenience that the most go-ahead farmer could wish for.

On some estates, a great backwardness in the way of providing the necessary accommodation is observable; and in these days of speculation, with "limited liability," want of the "ready" can never be an excuse. We are, indeed, reminded of "much cry and little wool" when we read the after-dinner speeches of gentlemen owning such estates. They remind the audience in general, and the farmer in particular, that the times renders it necessary his progress should be on, on—forward, forward! They hold forth with no little volubility on the benefits in store for those who combine practice with science, and, like Sir W. Scott's Laird of Killancureit, come out strong on "top-dressing and bottom-dressing." But follow us over their estates, view the ruinous condition and utter insufficiency of their standings; the stables and cow-houses without ventilation, excepting that occasioned by the hand of time and wear-and-tear of the elements; the very strength and essence of their folds running to waste into the horse-pond, or over the precincts of the highway, emitting effluvia the reverse of agreeable to the nasal organs of the by-passers. Look on this, and look on that, and we will require little stretch of imagination to think they give the note of encouragement in much the same strain as they would give the cheering "Hark forward! away!" to their lagging hounds in the midst of a crack cover. But we must break off our unconnected jottings, and give birth to our ideas on the essentials requisite for the formation of a good modern homestead.

AGRICULTURAL STATISTICS.

Amongst the very gravest of our difficulties is the choice of a subject. The painter, the poet, and the orator alike recognize its importance. Provide but a congenial theme, and half the work is accomplished. Necessary as this may be to the success of any one, to none is it more so than to the honourable gentleman who has "something to say." Year after year, as the season comes round, has he to meet his constituents with something fresh and palatable. Although little, perhaps, his own practice in Bucolics, as a County Member he feels that he must talk agriculture; skilfully associating what the farmers may have done for themselves with what he has been doing for them elsewhere. The difficulty here is but too often manifest. What can be chosen to dilate on? What practical point is there he dare touch on? Or, has he been really doing anything during the last Session in his chartered character as the champion of the rural interests? His great want is a text-word. Once so provided, he runs on smoothly enough; while without it he flounders on through unmeaning inanities, or yet more pitiful pleasantries.

Since the day when Protection fell, never has the County Member been so well armed for the annual meeting of his especial Society as during this present autumn. The difficulty of finding a subject is never for a moment experienced. He has one ready at hand that cannot fail to show him in the best light. He has been manfully doing his duty as the representative of an agricultural community. He has opposed the enactment of a measure directly bearing upon them; and what is more, his opposition has been successful. He comes, in all the flush of victory, to tell his friends what he has done; and to receive in return their cheers and gratulations. He may have lost the duty on corn; he may have kept the duty on malt; but he has stayed the collection of agricultural statistics, and he feels that he has not laboured in vain.

The loss of this Statistics Bill would appear, indeed, to be a very great triumph. So far, however, as we can gather, it is one much more appreciated by the champion himself than by those he has been fighting for. It has been by no means uncommon, during the progress of the late meetings, to see the member corrected by one of his supporters. The former begins with an Io triumphè speech from the cross-table, more or less directly implying these statistics to be all that is terrible and impossible. Later in the same evening the tenant-farmer has confessed that he saw nothing so very dreadful about them, after all; and, in fact, that the sooner he got them the better. Thus at the Radnor meeting, while no less a man than the Chancellor of the Exchequer associated the question with all sorts of doubts and difficulties, Mr. Smithies, a large farmer, did not appear to think there was either any great difficulty or danger about the matter. At Northampton, again, though Mr. Stafford laboured hard to show such information could be of little use, Messrs. Beard and Beasley both argued that we ought to have it. At Woburn, Colonel Gilpin, after dwelling on his own vote against the Bill, read a letter from a Scotch farmer, strongly advocating the establishment of such a system. Mr. Mace, at Staplehurst, thinks the measure calculated to benefit the farmer; and Mr. Pritchard, at Bridgnorth, acknowledges its value and importance. Against these, we have a rather stormy demonstration at Worcester, and a similar feeling, without much argument to support it, at Ongar. It must still be remembered that the farmers have not often the same opportunity for expressing themselves, or are not so fully reported as their representatives. But so far, we repeat, as we can take the tone of these meetings, a great deal more fuss appears to be made over the business by those in the House than by those out of it.

We have taken the trouble to extract and arrange what has lately been said on the subject. Although its further consideration has not elicited anything very novel, the opportunity of thus comparing one opinion with another may be both interesting and useful. Our readers may now do this for themselves from what we furnish in our pages. In fact this record may be a convenient mode of reference hereafter; as there is little doubt but that the question will be re-introduced in the next session. That it will eventually be carried out is even now almost as strong a certainty. It is, after all, the machinery only that is objected to. Of the many honourable members who declaimed on what they had done against the Statistics Bill, there was scarcely one dare dispute the value and necessity of such returns if but properly obtained. Sir Cornewall Lewis says "it would be a great advantage to know the breadth of land sown." Sir Bulwer Lytton, that "the principle of Agricultural Statistics is in itself good." Lord Charles Russell, that "no one can doubt the importance of such information to farmers." Sir John Pakington considers that "it is most desirable to obtain these Statistics, especially for the benefit of the farmers themselves." Lord Elmley is "favourable to the principle." Sir T. Winnington "thinks they should be tried." Mr. Biddulph, that "an accurate knowledge of what is grown would be very beneficial to farmers." In Mr. Blakemore's opinion "these statistics would be of the greatest importance to the whole community, and to no one more so than the agriculturist." The Honourable Robert Clive admits "great good might result if the principle could be carried out." Mr. Stafford, that "the farmers would readily respond to a measure not inquisitorial and compulsory." Major Beresford, that "if a true system could be established, the greatest gainers by it would be the agriculturists." Mr. Holland feels that "were the system once adopted, the farmers would find it so beneficial as to gladly contribute the information." Mr. Alcock "thought the farmers were under a sort of moral obligation to furnish the information." Sir Joseph Paxton "could not understand how anything like a bug-bear could have been started about the subject." Sir E. Filmer "thought it was perfectly right that agricultural statistics should take place." Lord Newport "entirely approves of the principle." Even Mr. Drummond "is willing to tell anybody who wants to know how many acres of corn he grows;" while Sir John Trollope "does not see that there can be the least objection to tell the number of acres under crop."

There is no doubt that the Bill of last session was indifferently conducted. As we at once pointed out, the evidence taken by the Lords' Committee was palpably defective. They scarcely called a farmer before them. The most of this omission has been made by Sir Bulwer Lytton, in his address to his Hertfordshire constituents, by far the strongest and most argumentative of anything that has lately been said on the subject. We fancy, indeed, that it has in a great degree given the cue to many who have followed him. One honourable baronet ingenuously admitted that he had formed his opinion, not from the Bill itself, but by Sir Bulwer Lytton's speech upon it. After all that has been said, we confess that we have great hopes that the next time of "asking" will be more graciously received. After the failure the Lords made of the matter, let those gentlemen of the Commons take the business into their own hands. Let them have another committee appointed, and then, above all, let them have the farmers before them. Some of the most valuable and standard information on agricultural matters has been thus elicited, while it is by this means only that we can proceed with any safety or satisfaction to the attainment of that object which is so desirable and so necessary.

We have consistently, and always with the interest of the farmer as the first to be considered, used our endeavours to secure such intelligence. In accordance with this view, we also give this month the estimates we have received in answer to our numerous inquiries on the late harvest. We will only repeat that these have been furnished by some of the best authorities in the kingdom, and that they can consequently be well left to tell their own story. In some instances it will be observed that we publish more than one report from the same district, although these agree very much in the general conclusions arrived at.

AGRICULTURAL STATISTICS:

OPINIONS OFFERED ON THEIR PROPOSED COLLECTION, AT THE RECENT AGRICULTURAL MEETINGS.

Now there is one thing which is obvious with regard to agricultural statistics. For the most part a government is able to collect statistics without any express agency or expenditure. It is done almost always indirectly. You impose a duty upon sugar or tea; and in order to get at the amounts imported, you ascertain what is paid for duty. Thus without any additional expense you are able to get at the precise quantity. This remark applies to a very large class of subjects. Take malt, which is an agricultural product; by taking the duty paid upon malt, you ascertain at the end of the year how many bushels have been consumed. So with a large class of statistics. It has been said that it would be very desirable for many purposes, that the precise quantity of agricultural produce grown annually should be known. It is important in order to prevent people indulging in injudicious and losing speculations upon corn, by preventing persons buying at a price which they would know could not be warranted, if it were known what the precise quantity of corn in the country was. That which prevents such speculation is always economical. With regard to knowing the breadth of land which farmers may sow, I think there can be no reasonable doubt this would be a great advantage, if we could by this means have an accurate account of the quantity of grain produced. But it seems to me there would not be much advantage to the agricultural interest by this. We all know how often those who are well able to form an opinion, are misled with reference to the future price of corn, consols, &c. I confess I do not share the fear of those who believe that to ascertain these statistics will enable the government to impose a tax or the landlord to raise his rent. I can only regard such notions as exceedingly chimerical. I do not believe that such information is wanted by either government or landlord, or that either are so ill-informed that they would derive much additional information from agricultural statistics. My objection arises in a different direction, inasmuch as you must have a new agency to obtain these statistics, you must incur a considerable expense, which, as far as I am aware, is incurred in no other instance for a purely statistical purpose, except for taking the census; but numbering the population is of much importance, and answers many important ends. This process is attended with considerable expense—as far as I recollect it was something like £200,000 on the last occasion. The expense and trouble are so great, that it is only incurred once in ten years. With regard, therefore, to agricultural statistics, it remains to be seen whether the facts we shall obtain will be accurate, or whether we shall be able to ascertain, from knowing the breadth of land under cultivation, what the produce will be. As I have said, the expense will be considerable, and I cannot see that the result will enable us to form that accurate opinion that would justify me in recommending the system.—Sir G. Cornewall Lewis, Bart., M. P. (Chancellor of the Exchequer) in Radnorshire.

There has been one charge brought against the general intelligence of the farmer, on which he would now speak, and with their permission refute. During the last session of parliament a bill had been brought forward for the avowed object of obtaining a correct system of agricultural statistics. To that bill the farmers of this country were, as a body, opposed, and he thought rightly opposed. They were not, however, opposed to the spread of intelligence, or to a good, judicious, and conciliatory system of agricultural statistics; but they were opposed to that particular bill, as it employed the most odious machinery to defeat its own object. That bill had been founded on a report of a committee of the House of Lords, and a person would have thought that when that committee was legislating on a matter which concerned the tenant farmers more than any other class of men in the country, they would have made tenant farmers their principal witnesses. Such, however, was not the case, for out of 19 witnesses examined before the committee, there were only five who were at all practically acquainted with agriculture, and out of those five there was not one in the position of a tenant farmer, or who could be called a representative of the class. A great number of government officials, however, had been examined, and foremost among them were four poor-law inspectors. Naturally enough, these gentlemen—on the same principle that the leather-seller in the besieged town said that for the fortifications there was nothing like leather—stated that, for a popular and conciliatory system of agricultural statistics, there was nothing like the machinery of the poor-law com mission. The committee, and the government too, adopted that recommendation, and it had been accordingly engrafted on the bill. Now, the last person to whom a farmer was likely to communicate the result of his operations was a man in any way connected with the payment of his rates. These gentlemen of the poor-law board had, it appeared, already tried what they could do in the collection of such statistics, but they found they could not get on as well as they wished, and therefore it was that the bill was made compulsory, obliging the farmer, under pains and penalties, to make his returns. They were asked if the farmers would object to such a measure; and the answer they gave was, "Lord bless you, no. It is the very thing the farmers want—they want to be compelled to make these returns." The committee was green enough to believe them, and the Government green enough to believe the committee; and thus it happened that to the most unpleasant machinery was conjoined the most vexatious and inquisitorial inspection into a man's affairs, exposing him to the malice of spies and informers. To that bill the farmers objected, not because they were farmers, but because they were Englishmen. If it had been passed, it would have caused so much disgust and such a spirit of revolt that, instead of advancing agricultural statistics, it would have thrown them back five-and-twenty years. In private he had done his best to frustrate the passing of that bill, and, had it not been withdrawn, he would have done his best to defeat it in public. The principle of agricultural statistics was, however, in itself good; and he would take upon him to advise them that, as it would scarcely do for any one class of the community to appear opposed to that spirit of knowledge which characterised the 19th century, they should give their approval to a just and conciliatory measure, which would, as in Belgium, work on the voluntary principle. The same principle prevailed in Scotland, where the Highland Society collected the most useful statistics from the local associations, and they in their turn from the individual farmers, but all voluntarily, and under seal in the strictest privacy.—SIR E. BULWER LYTTON, BART., M.P., at Hitchin.

No one can for a moment doubt the importance of information of all kinds to farmers. I have no hesitation in saying that that which I covet most for myself and my friends is information. But, on the other hand, if there is one thing more than another at which my nature revolts, it is the horrors of the inquisition. Now, gentlemen, there is a very old saying, that truth lies at the bottom of the well. That is abstract truth, but the practical fact is that truth lies in the middle of it. It is just the attainment of that golden mean which would be so desirable in the collection of agricultural statistics. Why, how important they must be! It was only yesterday, when riding over this estate, I heard a conversation which had arisen between some farmers as to the probable cost of cattle during this autumn, and everything relating to this point turned upon the nature of the turnip crop; but the very best-informed gentleman present did not seem to know whether the crop was good or bad throughout England, and therefore they had not sufficient data upon which to form their opinion. If, then, it is desirable in such a case to obtain information to enable them to lay in their autumnal stock, how much more important is it to have correct information with respect to corn, the great staple of the country, which produces the food of man? I have said that the whole of the difficulty of this question arises in its solution, and I want to know who is so fitted to come to an accurate solution as the farmers themselves? At present, as it appears to me, the question is somewhat equivocally dealt with. One scarcely knows the opinion of the agricultural world upon the subject. Some are for and some against it; but no one appears very much in earnest about it, for no one puts his shoulder to the wheel to collect the general opinion. If agriculturists were really in earnest, and really desirous to cast off the certain stigma under which they will labour as long as people are under the impression that they want to keep back something, they would collect the opinions of all persons interested in the question, and then, either through their representatives in Parliament or by means of a deputation to the Home Secretary, make known their views and wishes to the Government of the country. I say this because I am anxious that the agriculturists should as a body stand as well in the social scale as it is possible for them to do. They stand at the present moment almost as high as any body of men can, and no human being has a right to complain of them, or to throw at them the charge that they profess what they do not practise; and if some are a little dissatisfied and sneer at the agriculturists, while at the same time they expose their own ignorance, it is owing to the fact that the farmers have opposed the collection of agricultural statistics. Let them, then, put their shoulders to the wheel and remove that stigma, and then they will occupy as high a position as any industrial community in the universe.—LORD CHARLES RUSSELL, M.P., at Woburn.

As to agricultural statistics, he considered it most desirable to obtain them, especially for the benefit of the agriculturists themselves. He did not believe, however, that they could be collected effectually without the good will and hearty co-operation of the farmers themselves. He believed and hoped that some system would be discovered in England, not inquisitorial in its nature, which would give satisfaction to the farmers and arrive at the desired object. —SIR JOHN PAKINGTON, BART., M.P., at Worcester.

He would not hesitate to declare that he was favourable to the principle of agricultural statistics. There were two questions to be considered—first, would these statistics be of advantage to the farmer? and, secondly, by what method should they be gathered? Now, he asked, would they be of advantage to the farmer? (Cries of "Yes" overwhelmed by shouts of "No, no," and a voice "The 'noes' have it.") The fact was, the question must be settled one way or another. He had been told that the farmers had an idea that this was a question between landlord and tenant, but he did not believe they had any such idea. The interests of the two were inseparably woven together, though certainly it was not until lately that the discovery was made that our individual or national prosperity did not depend upon one man or one nation "licking" the other. George IV. used to declare that France was the natural enemy of Great Britain, and that it was impossible for England to exist by the side of France. It has since been found out that the two nations could subsist side by side, and that the prosperity of one would be that of the other. The same antagonism had been supposed to exist between the landed and manufacturing interests, but it has now been discovered that the idea was an absurdity. Thus, if agricultural statistics benefited the whole community, they would benefit the agriculturists indirectly; but he was certain they would be of more use even to the farmers than to the rest of the population. When he heard so many "Noes" uttered, he could not refrain from telling them his opinion on the matter.—LORD ELMLEY, at Worcester.

He was not one of those who thought great advantages would result from the adoption of them; still he thought they should be tried. He suggested that they should be tried first in a simple form, and be confined to obtaining information as to what crop each acre was planted with throughout the country, leaving for future consideration the question of stock and other things.—SIR T. E. WINNINGTON, BART., M.P., at Worcester.

The late harvest had a very narrow escape from being one of the finest, most abundant, and cheapest they had ever been blessed with. If they looked round the country and saw the ricks, they found they were plentiful and large; but it would be very difficult for a man with agricultural statistics or not to say what those ricks contained.—MR. J. H. FOLEY, M.P., at Worcester.

Farmers might be assured that some accurate knowledge of what is grown in the country would be very beneficial to them and to the country at large. It was impossible, upon such an occasion, to enter into any argument as to how far such a measure should extend; but that some such knowledge as the bill sought to obtain was necessary, all must admit.—MR. BIDDULPH, M.P., at Ledbury.

The Agricultural Statistics Bill was sent down to the Commons with all the weight and authority of the House of Lords. Now it would be a great favour to his hon. colleagues and himself—as a measure for the same object would again be brought into Parliament—if they would give them, on some proper occasion, their opinions and advice on that important subject. He would confess that the bill which came before the House of Commons in the last session was, to his mind, of so objectionable, inquisitorial, and obnoxious a character, that, in common with most of the members for agricultural counties, without any reference to party or creed, he felt himself obliged to give it all the opposition in his power. They succeeded in getting the bill thrown out, under a promise that a more matured and better-considered measure should be brought forward on a future occasion. He hoped he should not be misunderstood. He did not wish to shrink from the expression of his opinion that accurate agricultural statistics would be of the greatest importance to the whole community, and not of greater importance to anybody than to the agricultural body themselves. But he did think it most monstrous that an occupier of land to the extent of three acres should be called upon to make a return of how many cocks and hens he might have, how many eggs they might lay, how many pigs he might have in his stye, and how many head of cabbage and mangold wurzel he might grow; yet it was a positive fact that by the schedule of that bill those items were required to be returned. By all means let there be returns, but let them be general—at the furthest, let them be parochial or unional. Don't let them pry into the individual affairs of every man, the humblest as well as the highest. They might just as well ask him how many bottles of wine he had in his cellar, or how many sovereigns he had in his pocket, as to require the poor agriculturist to make such returns as those he had alluded to.—Mr. Blakemore, M.P., at Ledbury.

There is a question which interests us all, and which was discussed to a certain extent during the last session of Parliament, and which will, no doubt, come before us again in the ensuing one—I mean agricultural statistics. Now I am not prepared to say that I do not admit the principle. The principle may be good: the difficulty is in carrying it out so as not to be offensive or inquisitorial. There is the difficulty. If the machinery could be set to work so as to be satisfactory to all, I believe great good might result from it. But, as I said before, the difficulty is in collecting these statistics, so as not to interfere in any way with private affairs. Of course, if it is not to be done, there is an end of the matter: but I think that, unfortunately, the question cannot be settled in this room.—The Hon. R. W. Clive, at Ludlow.

He had had some experience of the collection of agricultural statistics in Ireland. It was not done there by the Government: the police were simply requested to ask the different neighbours certain questions, which they might answer or not; and on the answers to those questions were founded the statistics which were sent to Parliament. The tenant-farmers of Ireland did not object to this system, because there was nothing inquisitorial and compulsory in it; and he believed that, if the Government would bring in a bill which should not be inquisitorial and compulsory, the tenant-farmers of England would readily respond, and the agricultural statistics of the empire would be generally collected—perhaps not so minutely as to catalogue every egg that was laid, but sufficiently accurate to afford to the country and to the world all necessary information as to the agricultural capabilities of the island. The statistics of Ireland were no more guide to the occupiers there, as to the state of the market, than the Georgics of Virgil. What really would influence farmers, as well as the community at large, would be a knowledge of the quantity of corn to be expected from foreign parts; but of this it was impossible to have anything more than vague rumours. The returns from Scotland, too, of agricultural statistics, formed no guide for the market, as it was known that they referred only to the crop of 1855, and not that of 1856. Well, then, the farmers felt this—that, as a class, they were not more likely to benefit than any other class by the provision of agricultural statistics; and that, if the process were to be compulsory and inquisitorial, if they were likely to be annoyed and harassed by its exactions, they would one and all protest against it, and direct their representatives to resist it in every possible way.—Mr. Stafford, M.P., at Northampton.

They were now in a state of most blissful ignorance; and if ignorance were bliss, it was folly to be wise. If their legislators told them that they must stand still, and go no further, why, they must wait; but he believed, nevertheless, that it must come, and that, ere long, the Legislature would come and ask him how many acres of wheat, of barley, and of oats he cultivated; how much arable and how much pasture-land he held; and how many head of cattle he kept. He contended that, as it must come, it would be better to meet the question fairly and candidly; and showed that the hop-growers suffered no injury from being obliged to make a return of every pound of hops they grew.—Mr. Bearn, at Northampton.

He agreed that an inquisitorial measure ought to be resisted. But there were certain points on which they ought to be informed—such, for instance, as the number of acres cultivated; how many in pasture; how many under the plough; how many waste. There could be no harm in knowing such things as these. He remembered that when the question of the corn law was introduced, three statements of the corn production of the country, made by Sir Robert Peel, M'Culloch, and Caird, differed to the extent of 7,000,000 quarters a-year as to what was the wheat cultivation of this country. Now, he did not see that any mischief could arise out of clearing up this mystery; but, on the contrary, it might be useful, to dissipate alarm.—Mr. Beasley, at Northampton.

There would be no advantage in these returns but to show to the world everything the farmer was doing; nor did he think it was necessary to know the exact amount of every crop grown. If "ignorance was bliss" in this respect, 'twas "folly to be wise." Agriculturists should be content, and let well alone; and when they went to market, it should be to buy or sell at the market-price, without making speculations as to what quantity of any particular article remained in the country. A much less healthy state of things than the present would exist under a system of statistics, which would foster speculation, and unduly raise or depress the markets.—Mr. H. Hudson, at Worcester.

When, as chairman of the board of guardians of the Pershore Union, he specially convened the guardians, by request of Lord Aberdeen's Government, and submitted to them the expediency of agricultural statistics, only one guardian voted in favour of the plan.—Mr. F. Woodward, at Worcester.

We have been told there are about 18,000,000 of inhabitants in England and Wales, and that there are 3¾ millions of acres of land under wheat cultivation, the produce of which is 3½ quarters to the acre, which will give a total yield of 13 millions of quarters. We shall want, possibly, 5,000,000 quarters more. It has been said that only 2,000,000 or 3,000,000 quarters will be required; but, taking my own idea as the correct one, it is important to us, as consumers, to know where the additional 5,000,000 quarters are to come from. I learn that in the north of France the harvest has been favourable; in the middle, indifferent; and in the south, bad. The average growth of France is 25,000,000 quarters; but this year, they are 2,000,000 or 3,000,000 short of that quantity. They generally send us from five-eighths of a million to 1,000,000 quarters, which we cannot expect to receive from that country this year; neither must we look to Spain or Portugal for any supplies. Then we turn to America, which, I am told, has grown 18,000,000 or 20,000,000 quarters; and in 1850 she only grew 12,000,000 quarters. Of that quantity, possibly a million and a-half or 2,000,000 quarters will come to this country; and from Russia and other countries we may make up the necessary supply: but I do not think it will at all exceed the demand. At the same time, I don't anticipate a rise in the price of agricultural produce. I do, however, anticipate that the farmer will get living prices; and I don't believe, from the conversations I have had with them, that they would wish to have higher prices. It is no fault of the farmers that prices have been as high as they have. So far for agricultural statistics; and I believe, when we consider that 50 years ago there were 5 acres of land to every individual, that now there are only 2½ acres, and that 50 years hence there will not be more than 1 acre to each individual, we shall all admit the great importance of resorting to proper measures for securing to the people a due supply of food, and of making progressive improvements in the science of agriculture.—The Rev. E. F. Beynon, in East Surrey.

As a large tenant farmer, he did not think it would be as the Chancellor of the Exchequer seemed to imagine, a difficult matter to arrive at a pretty correct estimate of the produce of agriculture in this country. He ridiculed the idea of landlords taking any advantage of the information gained by such statistics, for nothing was more easy than for them now to obtain the fullest information as to the quantity of corn grown and the number of cattle and other stock on their tenants' farms, either by personal inspection or through their agents. Nor was he afraid of Government getting agricultural statistics for the purpose of taxing farmers; he thought there was far more likelihood of the Government taxing them first in order to get incidentally, as in the case of malt and other articles, the required statistics.—Mr. Smythies, in Radnorshire.

My own opinion on the subject was pretty well formed; but, although I think dictation by constituencies to a representative is neither proper nor expedient, I think a representative is bound, in a matter in which the interests of his constituency are wrapped up in a particular manner, to ask their opinion upon it; and I, therefore, thought it right to put myself in communication with four or five of the largest tenant-farmers in Essex, and ask them distinctly their opinion with regard to agricultural statistics. The answers which I received from those men—answers, let me say, full of good sense and sound argument, showing not a cramped view of the case, but the opinion of men who hold large tracts of country, and farm them in the noblest manner—all agreed that the most stringent objections existed to the proposed measure for the collection of agricultural statistics. Now, I wish at once to say that, if a true and just system of agricultural statistics could be obtained and published annually, without prying into a man's private affairs, I am quite confident that the persons who would derive the greatest advantages from such a system would be the cultivators of the soil themselves. The thing has been tried already, and has succeeded to a certain extent; for, of all the people who have endeavoured to obtain a system of agricultural statistics, the Scotch have been most successful, and no man in this room can doubt that our Scotch farmers will look after their own interests quite as sharply as any agriculturist in Essex or Suffolk; and they do not hesitate to declare that they reap a benefit from agricultural statistics. I think, therefore, that if they could be obtained in England with more satisfaction to the agriculturist, they would probably be advantageous; but if in your endeavour to obtain them you are obliged to enter into all the private affairs of a man, inquire what capital he embarked, what was the amount of his stock, what his returns, and what his expectations—an investigation so inquisitorial, and which would not be thought of, with respect to any other profession, would not fail to become a most intolerable nuisance. I now speak distinctly of the measure which was brought before us; and looking at that measure, independent of its inquisitorial character, I think that the means which it proposed to adopt to obtain agricultural statistics were most objectionable. The object was to be effected solely through the medium of the poor-law guardians. Now, if there were any set of men more than another to whom farmers would be unwilling to disclose their private affairs, it is the poor-law guardians. They respect the poor-law guardians when employed in the discharge of the important trust committed to them; but they do not want them to come and make an inquisitorial inspection of their private affairs. So much for the machinery of the measure. I now wish to speak to you of how it came to be submitted for legislation. It was on the recommendation of a committee of the House of Lords, who took evidence upon the subject. They examined some fifteen or sixteen witnesses, hardly one of whom was practically acquainted with the cultivation of the soil; above all, they consulted the opinion of the poor-law inspectors, who were naturally desirous that their own machinery should be adopted. If they wanted to found a measure which could be useful to the agricultural interests, they should have examined persons practically acquainted with farming operations; but it was most unjust to found a measure on the opinions of men holding particular crotchets, and ask the Legislature to sanction it. Under these circumstances, I thought it my duty to attend in the House of Commons every evening it appeared on the paper. I should be afraid to tell you how often that was; but it was put off from day to day, and from week to week, till at last it totally disappeared. There is no doubt that it will be again brought before Parliament. If so, the Conservative members must take care to have it referred to a select committee, which would take the opinions of practical agriculturists upon it. —Major Beresford, M.P., at Castle Hedingham.

He was one of those who objected two years ago to the mode in which it was proposed to procure the returns; he thought it would be unfair to the agricultural community; that they would never submit, and that they ought not to have been called upon to submit, to it. Still he was of opinion that certain agricultural statistics ought to be obtained, if got in such a manner that nobody was injured; and he would give them an instance or two to show the necessity there was for them. In 1846, for about six weeks after harvest, the price of wheat was about 48s. 2d. to 45s. 2d. After six weeks, and up to November, it began to improve a little, and reached something above 50s., but in November the price fell to 50s. The fall in the price created a sort of a panic, many of the more necessitous farmers running to market to get rid of their grain. Soon after Christmas it appeared there was a great scarcity coming on, to the great surprise of everybody. Why should not the farmers have known of that? Why were they not on their guard against being obliged to sell their produce at a low price? What happened? Why, in the month of January, the average price of wheat was above 100s., and he himself sold 200 bags at nearly that price. Thus every person who sold his wheat before Christmas sold it at half the price he might have got for it. Now, with accurate statistics, a calamity like that—for it was a calamity to them — could not have happened. The same uncertainty existed with regard to stock.—Mr. Curtler, at Worcester.

Legislation on this subject had been a failure, because the basis acted upon was absurd and vexatious; but they would have agricultural statistics, have them speedily, and have them through the medium of the farmers themselves. He held in his hand a good reason for arriving at the conclusion just stated. (This was a circular from the office of the *Mark lane Express*, for a return of the grain, turnip, swede, and mangold crops. He was of opinion that when once the system was adopted, the farmers would feel it so beneficial that they would be glad to contribute the information. —Mr. Holland, at Worcester.

He would frankly state that if he were asked in a proper manner, he should be very happy to give the Government any statistics which might be thought advantageous to the country; but it was neither desirable nor proper to put a legal compulsion upon the farmer in order to force from him anything which he did not deem desirable to supply. Yet, at the same time that he would resist anything like legal compulsion, he thought that the farmers should consider themselves under a sort of moral obligation to furnish these statistics; and certainly, if they did not wish to be subjected to any attempt at legal compulsion, they should freely and fairly, as was done in other countries, furnish them. They might depend upon it that, if they did not, they would be forced in the end to make returns in a form which might be felt to be odious. Members of Parliament were very often told, after an obnoxious measure had passed, that they had not done their duty; but they must remember, that they, as constituents, had a duty to perform as well as their representatives; and it was their duty on such occasions as the present to speak out, and tell them what their opinion upon this question was, and what ought to be done, for it was impossible otherwise properly to represent their feelings in the House of Commons.—Mr. Alcock, M.P., at Epsom.

I am of opinion that there is a vast deal of humbug in the matter. I don't believe it is worth your while either to oppose them or adopt them. If anybody wants to know how many acres of wheat, or of turnips, or potatoes I grow, I'll tell him; but as to its being of the smallest use to any living man, I don't believe one word of it. People go mad, and nations are going mad after these statistics, and if you don't furnish them I will tell you what will be the consequence. You will have fellows sent round the country to take them, and then you will have to pay for them pretty smartly. That is the point about this agitation which I dislike. I think the odds are that the gentleman who will be sent round will be the barrister of seven years' standing, and that is a sort of gentleman who I think is getting a vast deal too much employment already. I think it is perfectly absurd to suppose that these agricultural statistics will be of the smallest use. You cannot give the requisite information directly after the crop is out of the ground, for I defy anybody in the world to—and no farmer is fool enough to suppose that he can—tell how his crops will turn out until they are thrashed. It is therefore nothing but nonsense to pretend that any advantage whatever can arise to the farmer from the collection of agricultural statistics.—Mr. H. Drummond, M.P., at Epsom.

He thought it would never do for the farmers to allow, if they could help it, any measure to pass rendering it compulsory upon them to furnish these statistics. It would be a great annoyance to have a printed paper left at their residence every year, and if they did not fill it up to be hurried off to a court and subjected to a fine. The object of these statistics was, in his opinion, not so much national as was pretended, but partly to enable the foreign merchant and speculative dealer in corn to undersell the farmer. There was some hardship in calling upon the farmers to give evidence against themselves, and for that reason he should go into the lobby most cordially with Mr. Alcock to vote against such a measure. He did not agree as to the great value of these statistics when obtained, for when he looked to the table of the library of the House of Commons he thought it was loaded enough already with statistics.—Mr. Evelyn, M.P., at Epsom.

As regards the use of these statistics to farmers in particular, I have only to say, that in every business, trade, or profession, it must always be advantageous to those engaged in it to know as accurately as possible those facts which mainly affect their interest. The price of agricultural produce must, of course, always vary much, from the variety of circumstances by which it is influenced; the amount of that produce in any given year is, however, the element of greatest influence, and, in the long run, it must always be best for farmers, as for every one else, to know as soon and as accurately as possible what the year's harvest actually is. I believe, moreover, that any government which omits to inform itself of so great a matter as the probable supply of food for the nation is guilty of gross neglect of duty. I know of no possible harm which can ensue to farmers from furnishing such information, and I do not consider them warranted in withholding it, merely because some of them may not be able to see of what use it is to be to themselves in particular. This is but the third year in which these statistics have been collected in Scotland, and already an amount of error has been dissipated and an extent of reliable information obtained, far exceeding what any one would have predicted. Indeed, so important will the information soon be reckoned that I am confident we shall very soon have a bill armed with penalties for obtaining it, were any considerable number of farmers to refuse to give it voluntarily. The latter plan is so economical and so free from irritating elements and so fitted to make farmers to stand well in the estimation of the whole community, that I do earnestly desire to see the landowners and tenantry of England take the lead in introducing some such plan of collecting the statistics of agriculture as has been found to work so well in Scotland.—Mr. Wilson, a tenant farmer, of Edington Mains, Berwickshire, in a letter to Colonel Gilpin, M.P., read at Woburn.

He hesitated not to say that, in his opinion, the bill for the production of agricultural statistics, or framed upon that principle, was the very worst that ever was laid upon the table of the House of Commons, and as such would receive his most determined resistance. The other portion of Great Britain had made up its mind, he didn't know why or wherefore, that these agricultural statistics were to do them a good deal of good. He thought they should have to make a composition, and have some part or another of the bill; but he would never assent to that part which should endeavour to make it compulsory upon the British farmer to give any items of his individual and private property. He should most decidedly and energetically object to any system which was founded upon the principle of compulsion or fines to those who did not conform to the provisions of this bill.—Sir W. B. Smith, Bart., at Ongar.

He had not yet seen a bill on agricultural statistics which satisfied him. It was a subject of great consequence to the whole country to know what they were to depend upon for the food of the people; and he thought it was perfectly right that agricultural statistics should take place. But he took objection to the mode in which it was proposed to be carried out; and he also thought they should wait for the opinions of their agricultural constituents. He did not like the putting of a man into his fields, appointed by whom he knew not, to see what seed he put into his ground, or what last year's crop was; in fact, it was like putting a *gendarme* over him. He did not mean to say it would be so, but it was their duty to wait and see what their constituencies said on the matter. He did not think there would be any objection to the averages of parishes being taken; but the individual interference he had spoken of was repugnant to the feelings of an Englishman, and he had too much of the Englishman about him to submit to it if he could avoid it. If the measure was for the good of the community at large, he would gladly support it, but not to the injury of the liberty of the subject. He cared not by whom the agents might be appointed—whether by a Tory administration, with Disraeli at its head, or a Whig Government—he should object to it in the form he had mentioned in making it imperative on them to make the returns required.—Sir E. Filmer, Bart., M.P., at Staplehurst.

Some farmers thought it would operate injuriously, while others were of opinion that it would act beneficially. For himself, he could only say he thought the more information they obtained upon any matter of such great importance to the public the better.—Mr. Mace, at Staplehurst.

Though he was strongly opposed to any inquisitorial prying into the private affairs of the agriculturists, he thought the measure a wholesome one, and calculated to benefit the farmer as much as anybody else. He thought the late bill went a little too far, and that it would have been better had it provided for "divisional" instead of "parochial" returns. On the Government devolved the responsibility of providing food for the people, and he trusted that means would be devised for putting them in possession of this necessary information.—Mr. Benson, at Bridgnorth.

He, for one, most sincerely rejoiced at the fate of the bill. In his opinion, the bill was hastily conceived and objectionable in many particulars. In the abstract, he entirely approved the principle of agricultural statistics, as he conceived that the acquirement of statistics in any form must be useful in a civilized country; but he ventured to think that the information should be obtained by a voluntary, and not a compulsory, mode. He thought the return should be confined to large items, without entering into smaller details, and that the inquiry should be conducted by means of local authority and local arrangements, made by those for whose benefit it was made, and from whom it was intended to collect information.—Lord Newport, M.P., at Bridgnorth.

He agreed as to the value and importance of agricultural statistics, but he despaired of their being obtained in any other way than by a compulsory mode.—Mr. Pritchard, at Bridgnorth.

They had no doubt heard a deal said of late about agricultural statistics, and he could not understand how anything like a bugbear should have started about the subject at all. He considered that agricultural statistics were as necessary for the community as any other statistics. But whether they might be of the same advantage to the State, or whether they could be rendered so accurate as to be essential, was a question he very much doubted, because the mode of obtaining them would require a great deal of machinery to do it. He had spoken to a great many farmers, and many had no objection, but some thought it an inquisitorial measure, as it would enable other farmers to know what they were farming. In his opinion it was rather a pleasant thing for a man to know that his neighbour was growing five acres of corn instead of three. There were only two persons who could be jealous of the operations of such a measure, and they were the landlord and their neighbours. With regard to the first, he put it to them whether the landlord did not calculate the crops on his land which the tenant was calculating. He could tell them what had been the crops on the Chatsworth estate for many years past, and so was it possible now for their neighbours to know what was going on by going over their fields. As far as he could learn, the farmers of this part of the country were desirous that any measure connected with agricultural statistics should be carried out upon some principle that they should not be burdened with any expensive machinery for carrying it out. If it could be done cheaply, and give as little trouble as possible to the farmers, they would offer no objection.—Sir J. PAXTON, M.P., at Bakewell.

He believed the farmer disliked them, as he thought they were a pack of nonsense and humbug, but he supposed they must have them. The only thing they would get was the quantities in this country, but he did not see how they could make a bill to compel them to return a true account, because if they had four quarters and only returned two quarters, how was it possible to get at the correct account?—Mr. JOSLING, at Ongar.

As regards the bill for the collection of agricultural statistics, I had great pleasure in presenting a large number of petitions—one, I think, from this neighbourhood—in opposition to its enactment. So far as that measure was discussed, I was opposed to it; for it introduced a compulsory and an inquisitorial system, requiring the farmers to make certain returns, and punishing with pains and penalties if they made any error in them or omitted to make a return at all. Such a measure, I think, was uncalled for, and would, I am sure, had it been passed, have been found most unsatisfactory in its workings. If the produce of a man's farm were required of him, it is easy enough to make a return of the number of acres growing any particular crop; but nothing is more difficult for him to do than to tell the quantity it may yield. I cannot give a stronger proof of the truth of this than by telling you what took place the other day in my own neighbourhood. A small grower thrashed a bag of corn, and calculated from it that he would have a yield of twenty quarters from what he had sown, but when he thrashed the whole crop he had only nine quarters. I give you this as an example of how difficult it is for a man to calculate upon the return of his crop, and how much he may be deceived in it. The returns which the farmers are required to make, if they are to be of any use for statistical purposes, must be made simultaneously, and at once compiled. If they are to take as long a time as the counting of the people, namely, three years—and figures representing men can be as easily counted as those representing quarters of corn—or even if they be three months in being compiled, they cannot possibly be of the slightest practical use to the agriculturists. At the best they can only give a very rough estimate of the quantity of corn in the country. Such is the case with respect to the agricultural statistics of Ireland, in which country they are collected by the police; and when we get a county police, too, let them take the returns in the best way they can, and make their calculations accordingly. They would not, as I said before, benefit you; and the only portion of the people which they could at all benefit is the commercial community, to regulate by them the balance of foreign exchange; and persons of that class, I find, call for them more loudly than we do. But have we not telegraphs, railways, and other facilities of communication? and, above all, have we not demand and supply to regulate the price of corn, without having recourse to agricultural statistics? The whole system proposed is a false one, and is likely to prove vexatious to the farmer; and therefore I opposed it. There cannot be the least objection to tell the number of acres under crop, and leave the persons making the inquiry to form their calculations on those data. That, gentlemen, was one question which affected your interests injuriously. It was down on the paper day after day for discussion, but never came on, as the Government, knowing that they would be beaten upon it, used to keep us night after night until 1 or 2 o'clock, and then postpone it. At last, we got rid of it by a side-wind. We got up one after another, and asked when it was to be brought on; and the consequence was that, by throwing in that kind of quick, sharp fire, we got the Government to withdraw it altogether. I was, I must confess, a leader in that conspiracy; and if it be again introduced in the same shape, I shall give it every opposition.—Sir JOHN TROLLOPE, Bart., M.P., at Grantham.

The opinion of the various authorities seemed to be in favour of collecting the information, but they all agreed that the machinery must be neither inquisitorial nor vexatious to the farmer. He himself thought that if it could be afforded them in a manner agreeable to the view of the agriculturists, the knowledge that there was a certain quantity of corn grown in the country at a particular season, and therefore a certain amount of capital existing—that knowledge must be useful to the occupier of land. Many people had stronger apprehensions against the measure than were, perhaps, necessary on the one hand; while, on the other, he thought that the advocates for the collection of agricultural statistics expected rather too much from them. Because, calculate what they might with regard to the breadth of land in the country sown with the different crops, they could not calculate the seasons—they could not tell whether they would have an early spring or a late harvest, and, above all, they could not tell what the manufacturers of England, who formed the millions of the country, would consume. They must remember a fact which there was too much fear was being kept in the background—that upon the position of the manufacturers depended, to a great extent, the consumption of corn in England. If employment was plenty, and wages good, the consumption by the working classes would be great; but if, on the contrary, wages were low and trade bad, nothing like the quantity would be consumed. Those were points with respect to which agricultural statistics would give them no information whatever. The truth was, that by having these statistics, they would be able to give a better guess at the quantity of produce in the country; but, after all, it would be but a guess.—Mr. NORTON, at Waltham.

Another hon. friend of his, Mr. Tollemache, had said they did not know the quantity of wheat produced in this country, and people ought to know whether they had the quantity they required for their support. Yes, they ought to know; but let them know the quantity they were likely to be inundated with from abroad—that was what they wanted to know. They wanted to know what competition they should have from other countries. Just before this question was agitated in Parliament, when the Poor-law Inspectors were ordered to obtain returns, Lord Ashburton, writing to a union in one of the returning counties, made use of the argument about our knowing how many tons of cotton and so forth came into and went out of the country, but then he went on to let the cat out of the bag with this sentence: "The great corn-dealers"—those were the people they had to be frightened at—"have long felt the need of collecting information for their own guidance." To be sure they had, but were they (the farmers) going to be silly enough to be gulled into giving them the information they required? That was no argument to show it was for their benefit. These matters had always proceeded from the Board of Trade, but was that board such as they could trust? Mr. Milner Gibson was the first who agitated the question in 1847, and now they saw it agitated by Lord Stanley of Alderley. His bill, however, like that of Mr. Gibson, never went to a second reading, which he attributed, in a great degree, to the petitions he had been the means of getting up against it. The Chancellor of the Exchequer, referring to this subject, told his Welsh audience, in Radnorshire—speaking in the true financial spirit of a Chancellor of the Exchequer—that the information would not be worth the cost of obtaining it. But, more than this, an influential supporter of her Majesty's Government, at the meeting which Lord Palmerston called of his supporters before the debate on the fall of Kars, when Lord Palmerston said he could not be expected to carry on the Government unless he was supported by his party, replied, "If you bring forward such bills as the Agricultural Statistics Bill you can't expect to be supported." He knew this to be true, because he had it from the gentleman himself. And Lord Palmerston, when he found he was receiving blows from his own party as well as from the Opposition, abandoned the bill. After expressing his regret that the question of agricultural statistics was not allowed to be introduced at the meetings of the Royal Agricultural Society, he observed that a good deal had been said about what had been done abroad on this question; but Mr. Leone Levi had stated before the committee that he knew no country in Europe where statistics were collected for the purpose now proposed. He apprehended, however, that the bill would not be again introduced; Government were heartily sick of it, and no future attempt would be made. In conclusion, he observed that the Western States of America could part with more corn than we could take from them, and it was of no use inquiring what we grew ourselves when we had a country which could pour in 18,000,000 of quarters, or, in fact, any quantity we might want. Wheat (he went on to observe) was now at a remunerative price, and barley was at a very high price, but no man living could tell whether it would be best to sell now or six months hence, even if they had agricultural statistics, because these would not furnish him with the quantity wanted for other countries, or inform him what those countries could supply to us. Until it could be shown that agricultural statistics would be a benefit, not to the community at large, but to the farmers of England, he should be slow to believe that it was to their interest that their concerns should be exposed to the public in the way proposed.—Mr. PACKE, M.P., at Loughborough.

I hope it will never be said of me or any other member that I am or that he is an enemy to information. I believe information, and accurate information, to be the only sound basis of legislation. I am sure that no one is opposed to such information; but on the subject of agricultural statistics there is a difference of opinion. It is a question, gentlemen, on which Ministers have been defeated—on which Parliament has been appealed to without being able to solve the difficulty. I believe that the minister of no country in the world has a better means of ascertaining the produce of the country than the minister of England. Remember, there is no parish in England in which the acreage is not known, and even the cultivation. That information exists in the Commutation of Tithe Acts, the awards under Enclosure Acts, and the maps of parochial assessments. I give no opinion that it is not necessary to obtain wider information; but when it is maintained in this country that we are absolutely in the dark, it will not be considered by you either irrelevant or impertinent if I, as your member, remind you of the existence of these remarkable means for the purpose of obtaining information on the agricultural produce of the country. It may be said that there should be more accurate means. Suppose you had inspectors, and they furnished an estimate, is there a man here who does not feel that nothing could be more deceptive than a return, for instance, founded on the calculations of the last harvest? The only deduction I draw is, that we can only obtain general results to guide legislation, and that there exist in this country the means of obtaining such results which are not open to the minister of any other country in the world. I do not say this to encourage a blind and bigotted opposition to any measures which may be passed on this subject. I only say that we are living in an age of statistical imposture, and that many returns in reference to agriculture are made by men who are not acquainted with rural life. We have a great basis, and on that we may build; but let us not encourage the cry—which is the cry of ignorance—that in this country the minister has no means by which he can obtain a general estimate of the agriculture of England. That, gentlemen, is not the case. We have the means, and we can improve them. I trust we will; but we cannot improve them without that support which cannot and which should not be obtained unless the body from whom we ask it is treated with that deference and that courtesy which are necessary and which they deserve.—Mr. DISRAELI, at Chesham, Bucks.

With respect to agricultural statistics, I wish particularly that you should know my opinion upon that subject, as in the year it was first brought forward in the House of Lords—where it originated—I happened to be president of the Royal Agricultural Society of England, and was examined before their lordships. I took the liberty of telling them what they might ask, and what they might not. I said they might ask for what every farmer would give them—the number of acres he had in different cultivation, but I warned them not to go one whit further; for I said "Directly you come to ask for the quantity of wheat, barley, or oats, the farmers have realized, you interfere with the question between landlord and tenant, and, by interfering so, instead of promoting, you will disadvantage agriculture in the greatest possible degree." I likewise gave a similar answer as to the statistics relating to animals, and I venture to say it would be most unfair to collect those statistics, because it would not show the stock the individual farmer had throughout the year, but only at the particular time at which the census was taken, and so would be most unfair as between the tenant and the landlord. But, gentlemen, as you are aware, so much antipathy was shown to the Agricultural Statistics Bill that the Government did not think it wise to proceed upon it; your friends, however, were not inactive, and it was determined by a number of gentlemen representing agricultural constituencies, as the Lords had taken their committee, and in their witnesses only examined three practically acquainted with agriculture, that the Commons should take their committee, and examine those who were practically acquainted with agriculture. In what I stated to the Lords I spoke the opinion of the farmers of England. I believe it is necessary for the farmers' interest that they should have taken the number of acres under different cultivation; a vast quantity of Russian wheat was sown last year where barley should have been, and, with the bad apple crop, look at the price of barley; therefore I think it necessary the farmer should know the annual acreage of wheat. I am very anxious on this subject; I wish particularly to know whether those opinions I have expressed are those which generally exist among you. Believe me when I say—connected as I am with agriculture, and myself a very large farmer—I would do nothing whatever to prejudice the agricultural interest.—Mr. W. MILES, M.P., at Evercreech.

He had no objection to giving an outline of the quantity of crops grown, but beyond this he could not go, and there was no plan suggested for their collection which was not objectionable, whether by the poor law, the police, or any other board. Let the Government, if they wanted information—they must understand that he did not mean by that to say it would benefit the farmer—establish an Agricultural Board, presided over by a member of Parliament—and employ not too many agents—two, three, or four would be enough throughout the country, who could transmit the necessary papers to the overseers of each parish, and they would find that by this means they would obtain pretty accurate returns. They must not expect to get statistics of pigs, lambs, and geese. These would be quite unnecessary.—Mr. W. CHOWLER, at Collingham.

The truth is, that many county members fear to disoblige the tenant-farmer towards the close of a Parliament, by supporting a principle which they know to be sound and useful to all, because the tenants imagine that some advantage would be taken by raising their rents, if they disclosed the real amount of grain grown on their lands. A very slight consideration would have shown that the object of the rejected bill was to ascertain the quantity grown in each parish, and not whether it was grown by Mr. Smith or Mr. Jones.—LORD STRADBROKE, in a letter to the *Mark Lane Express.*

PRESENTATION OF A TESTIMONIAL TO THE REVEREND C. T. JAMES.—This took place at the Fawn Hotel, Ermington, on Wednesday, October the 16th, in the presence of a large number of the subscribers and friends of Mr. James—Captain Edwards acting as chairman at the dinner which preceded the presentation. In addition to a very handsome silver salver, on which was a suitable inscription, the children of the village schools begged Mr. James' acceptance of a beautifully-finished paper-knife. The proceedings, though necessarily of a local interest, spoke highly for all who took a part in them.

GATHERINGS OF AGRICULTURAL SOCIETIES.

The societies of agriculture flourish exceedingly. There is scarcely a district in the kingdom but that within the last few weeks has enjoyed some such a demonstration. They appear all, too, to have been fully attended, or as the phrase is, to have gone off well. This is natural enough. Farmers, at present in pretty good heart, can really afford to enjoy such occasions; at the same time they are being led more and more to believe there is some good to be learnt from them. If they no longer go for a grievance, the same weapon may be turned to some other purpose. The Royal Bucks Agricultural Society has now a show of stock and poultry; while its patrons declaim on Scotch farming, and the cultivation of root crops. Who is there but remembers the uses of this very association some twenty years since?—The "hip hip" days of the Marquis of Chandos, when farmers met to talk of anything save farming, but to be great in invective, and terrible in denunciation.

Somehow or other these meetings do not strike one as talking too much of farming, even as it is. Either they are only indifferently reported, or the speakers but ill-chosen. At many of them, the success of the whole thing, like the occasional speculation of a country theatre, is made to depend on the appearance of one great star. The "points" are all his, and the other performers just walk through their several parts with but little attention or applause. Thus, we have Sir James Graham at Carlisle, Mr. Stafford at Northampton, Sir Edward Bulwer Lytton at Hitchin, Mr. D'Israeli at Buckingham, the Chancellor of the Exchequer in Radnorshire, and so on. It could hardly be expected that any of these gentlemen would be very strong on practical farming. Indeed, they but rarely attempt it. Sir James Graham, to be sure, thoroughly identifying himself with the farmer—at least as he must have imagined—declared himself for free-trade in every thing but freedom, which he is by no means desirous of having any further extended. For this he receives from the *Times* newspaper perhaps the most severe castigation that ever was administered to a public man. Mr. Stafford declares himself against the collection of agricultural statistics; and he, in turn, comes under the merciful consideration of our contemporary. Sir Cornewall Lewis, as apropos perhaps of the price of corn, dwells on the late war, and the highly satisfactory terms upon which peace was concluded. Even a Chanceller of Exchequer, however, is not altogether invulnerable, and the "thunder" once more is brought to bear upon him. Sir Bulwer Lytton's speech to his Hertfordshire constituents was a sensible well-studied address, that few could cavil at, and it passes accordingly. For Mr. D'Israeli we ourselves may answer, from having heard him. He roared "as meekly as any sucking dove," and declared himself with all the refined art of a man who means to say nothing. It is difficult to descend at once from the excitement—the cut and thrust of hot warfare, to the plain sayings of sheer utility; and so, despite the re-appearance of the Duke himself, and a strong rally of his old allies, the Buckingham anniversary went but slowly.

It would, of course, be impossible to give in our columns the proceedings at even a tithe of these gatherings. There would be, moreover, little call on us to do so. From some cause or other the general tone of them is much below that of the last two or three years. We have read many a column of what gentlemen said who meant well, and who meant especially to please their hearers, but we have read but little that bore directly on the real business of such occasions. Is it so difficult for the farmer to speak of his own pursuits? Or is the farmer too often put aside for local compliment and irrelevant display? We are rather inclined to the latter view of the matter. This is the age in which the farmers are just beginning to think and speak for themselves. What they want is a fair hearing at these celebrations. As it is, they come, too commonly, at the fag end of the evening, when the local reporter has filled his book, and the last train has thinned the company. The successful Exhibitor, and the worthy Vice-President are then "inaudible," or "briefly return thanks," when, in all probability, they are going much nearer the mark than many a great gun which has been fired before them.

It would be quite as impossible for us to attend all these meetings, as it would be to report them. We have still, within the last week, found our way down to two—that of the Buckinghamshire at Buckingham on Tuesday, and of the Bedfordshire at Woburn on Friday. The Buckingham, with its renewed strength, may work on to the realization of that practical use it now aims at, but it will require time to do so. The new features in its operations are both favourable:—changing the venue from one town to another—Aylesbury, Buckingham, Newport Pagnell, and so to others in turn—and giving an agricultural character to the day's proceedings by a show of stock. Its neighbour in Bedfordshire has also these two leading principles in its conduct, while it is far more advanced in its influence and arrangements. Indeed, the meeting in Woburn Park on Friday last wanted only one thing to make it one of the agricultural treats of the whole year. That want is, alas! but too common a one with us here in England. It was only "a fine day." At noon, just as the assembly was at its full tide—the stock placed and judged, the champion ploughing finishing off, and its great rival the steam plough in strong work—the rain set in. It continued more or less heavily until nearly time to go to dinner, thoroughly dampening an effect that otherwise would have been very perfect. In fact, we can remember few local associations now so generally good in all their details as the Bedford. The gentry of the county support it, the farmers support it, and the labourers support it. The show this year was held on classic ground; that is, in the park of a nobleman whose family before him have been the pioneers of agricultural development, and who himself has one of the best managed estates, and, more still, one of the best-managed farms in the world. It is rarely that any one has two such men to carry out his intentions as Mr. Bennett, the agent of the Bedford property, and Mr. Baker, the bailiff on the Woburn farm. Held on such a site, our readers may imagine what, with fine weather, there was to see and enjoy.

The Society was worthy of its trysting place. The stock show, difficult to inspect under the circumstances, was pronounced very excellent. A numerous entry of short-horns—amongst which Lord Brownlow's heifer particularly distinguished herself; some famous sheep —Mr. Thomas's Downs and Mr. Howard's Half-breds as the first to look to; and some very good horses and pigs, all evinced that the Bedfordshire farmers are going with the times. It is not, though, in stock only that the county is commendable. The champion ploughing was in some instances amongst the best work ever witnessed; and certainly the contrast between it and that of Mr. Smith, of Woolaston's steam invention might have been more favourable to the latter. The day, unfortunately, was against him. We must yet in justice add that the public did not estimate the performance too highly. Here people seem yet content with what Howard, Ransome, or Taylor (another county man) can do for them. The ploughs of these firms stood on the award list in the order we give them. We can only repeat that the work of all of them was wonderfully good, and the man and his tools equally to be applauded. One of the Duke's own teams took the champion premium with a Howard's plough.

We are afraid that even at Woburn some of the practical speaking came only at the fag-end of the entertainment. It is lamentable to see the time cut to waste in the distribution of premiums. At Buckingham the President had to leave long before he came to the end of the toast-list; and at Woburn, we have been since told, we missed a very good address or two. At either meeting the cause was the same—the terribly tedious manner in which the prize holders are called up to receive their reward. Surely all this could be expedited, or, better still, got through at some other time. As it is, there is routine enough already in the business of any public dinner, without our elaborating it by the observance of a mere ceremony, that might here be well dispensed with.

CALENDAR OF AGRICULTURE.

Finish the sowing of wheat, if any remains undone from last month. Take up Swedish turnips; store the roots at the homestead, and give the tops to the sheep in the fields, or to young cattle in the yards.

Flood-watered meadows: clean out, and put into proper order for use, the main channels, conveying gutters, and the sluices of flood-gates.

Begin to cut underwoods; plant forest trees; open-drain plantations; repair old fences, and make new ones; cut open ditches, and repair roads.

Thrash grain regularly twice in a week, in order to supply the animals with food, and the yards with litter. Cut into chaff hays and straws to be mixed for the horses, the fattening bullocks that are tied to the stake, and to be steamed for the milch cows. Apply all litter to the yards thinly and evenly, and spread over them all substances of different qualities for the purpose of being mixed.

Supply to the cattle in the yards, by break of day, an ample feed of turnips—rooted and topped for the feeding animals, and with the tops attached for the other sorts of cattle. Wooden cribs with latticed bottoms suit best, as the filth and rain-water escape freely downwards. The turnips should be all consumed by night, that no accidents from choking may happen unseen. Give to milch cows beet-root and cabbages, and some feed daily of steamed meats.

Continue the feeding of sheep, as has been directed, by giving fresh pieces of turnip grounds, and by nightly folding on the land cleared of roots. Feed pigs with steamed potatoes mashed with meals for the purpose of bacon; give to store swine potatoes in the raw condition. Feed poultry with light grains, and with steamed potatoes mixed with meals, and placed in troughs under a shelter in the poultry yard.

Attend to the feeding of young horses in the farm-yard; provide a constant supply of fresh water in a trough, and a convenient shelter-shed; give hay and straw, chaffs, bran, and oats, and a feed once a day of raw or steamed roots. The first winter's keep has a very large share in making good animals.

Begin to plough stubbles, and follow with the subsoil plough, and prepare, by fallowing, the lands intended for the early spring green crops, so long as the weather will permit.

METEOROLOGICAL DIARY.

Barometer.			Thermometer.			Wind.		Atmosphere.			Weath.
1856.	8 a.m.	10 p.m.	Min.	Max.	10 p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
p. 22	29.58	29.28	47½	61	59	S. West	brisk	fine	cloudy	cloudy	rain
23	29.28	29.24	50	62	52	S. West	brisk	fine	fine	cloudy	rain
24	29.24	29.12	48	59	51	S. & S. E.	gentle	fine	cloudy	cloudy	rain
25	29.23	29.50	46	62	50	W. by S.	lively	fine	fine	cloudy	rain
26	29.60	29.45	45	62	53	S. by W.	gentle	fine	fine	cloudy	dry
27	29.20	28.97	51	53	51	S. East	airy	cloudy	cloudy	cloudy	rain
28	28.74	29.0	48	55	50	S. West	airy	cloudy	fine	fine	rain
29	29.14	29.42	49	58	52	West	airy	fine	sun	cloudy	rain
30	29.57	29.77	50	62	52	W. by N.	gentle	fine	fine	cloudy	dry
Oct. 1	29.83	29.80	47	62	53	S. West	gentle	fine	sun	fine	dry
2	29.79	29.85	48	63	56	S. by East	brisk	fine	sun	fine	dry
3	29.85	29.80	53	64	59	South	gentle	fine	cloudy	cloudy	rain
4	29.67	29.77	57	63	59	South	var.	cloudy	cloudy	cloudy	rain
5	29.84	29.89	56	60	53	S. West	airy	cloudy	cloudy	fine	rain
6	29.99	29.94	52	57	57	East	strong	cloudy	cloudy	cloudy	rain
7	29.94	29.95	55	58	54	East	gentle	cloudy	cloudy	cloudy	rain
8	29.95	30.05	53	56	52	N. by W.	gentle	cloudy	cloudy	cloudy	rain
9	30.14	30.29	50	56	53	N. E. & S. W.	calm	cloudy	cloudy	cloudy	dry
10	30.22	30.29	48	61	51	N. East	gentle	fine	sun	fine	dry
11	30.09	30.02	50	58	56	N. East	gentle	cloudy	cloudy	cloudy	rain
12	30.07	30.14	54	63	52	Variable.	gentle	cloudy	fine	fine	dry
13	30.20	30.18	44	64	53	S. & S. E.	gentle	fog	sun	fine	dry
14	30.00	29.73	48	58	54	S. & S. E.	gentle	haze	cloudy	fine	dry
15	29.48	29.52	50	53	52	W., W. by N.	strong	cloudy	cloudy	cloudy	rain
16	30.00	30.25	48	57	52	W. N. W.	gentle	cloudy	cloudy	cloudy	rain
17	30.32	30.32	48	56	52	W., W. by S.	airy	cloudy	sun	cloudy	dry
18	30.33	30.33	48	59½	46	W., W. by S.	gentle	fine	sun	fine	dry
19	30.31	30.26	39	62	53	E. by N.	lively	fine	sun	fine	dry
20	30.22	30.19	52	63	45	E. by N.	gentle	fine	sun	haze	dry
21	30.20	30.30	45	62	49	W. & E.	gentle	fine	sun	clear	dry
22	30.30	30.33	43	66	56	E. S. E.	var.	fine	sun	overc't	dry

ESTIMATED AVERAGES OF OCTOBER.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.610	28.740	68	27	48.9

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
59.5	49.1	54.3

WEATHER AND PHENOMENA.

September 22. Showery.—23, 24. Showery.—25. Fine early; thunder at 5 p.m.—27, 28. Much rain.—29, 30. Much fine. Total rain of September 2in. 957cents.

LUNATION.—New moon 29th, 3h. 48m. morning.

October 1, 2. Two fine genial days.—3 to 10. more or less rain; 0in. 91cents. gauged.—11. Gloom, with rain.—12, 13, 14. Fine days; wet on 14th night, and also on 15th and 16th days.—17 to 22. Fine autumnal weather.

LUNATIONS.—First quarter 7th, 5 h. 38 m. morning. Full eclipsed 13th, 10h. 59m. night. Last quarter 20th, 6 h. 6 m. afternoon.

REMARKS CONNECTED WITH AGRICULTURE.

It will be perceived, at a glance, that the meteorological phenomena of this period are directly opposed. The first series to the 8th of October, combines all the elements of a depressed wet season. The second, to the end of the table, has afforded an example of what October used to present—a picture of perfect beauty, warm sun, genial mean temperature, and total absence of anything indicative of approaching winter. The crops are beautiful, the pastures rich in verdure, and an abundant promise is given of everything tending to produce comfort.

Croydon, Oct. 22. JOHN TOWERS.

IMPORTS OF WOOL INTO ENGLAND.

Notwithstanding the numerous contradictory statements which have from time to time gained publicity in reference to our future supplies of wool, both from abroad and the colonies, it must be satisfactory to learn that the imports of that article from our great sources of supply are steadily keeping pace with the demand. This fact must be a source of satisfaction, not only to our manufacturers, but likewise to the shippers of manufactured goods, because it is well known that very high prices frequently lead to a great decrease in production and the extent of the trade. We have unquestionably arrived at a period when a good supply of wool is highly essential to our commercial greatness, because we must not forget that the American manufacturers are now rapidly competing with us in some of the most favoured markets, and that we have a home trade to meet, of no ordinary magnitude and importance. Any actual decrease in the supply, therefore, must prove highly detrimental to commerce. And this remark must be the more evident when we consider the large quantities of home-grown wool annually exported to the continent—especially to Belgium—to be used in the manufacture of inferior cloths, and the necessity of importing fine colonial wools, which, although considerably dearer than they were twelve months since, are still by far the cheapest received into this country. The gold discoveries in Australia induced the opinion, even amongst practical men, that such would be the enormous demand for labour for other purposes, that wool-growing would be neglected, and that a great decrease in the supply would be the result of the discoveries in question. Fortunately, however, the production of wool in our colonies is too profitable to be neglected; and the flockmasters in Australia have always open to them in this country a good ready-money market for their produce. The apprehensions, therefore, that we shall receive only limited importations from Australia, are groundless. Instead of decreased importations, we have received a large increase in our supply of wool from thence this year, compared with last season. For instance, during the nine months ending on the 30th September, we imported into London, Liverpool, Hull, Bristol, &c., 214,588 bales, against 190,118 bales in the same period in 1855. The arrivals of foreign were 89,134 bales, against 68,316 do. last year. Thus we perceive that the increase in the supply of colonial wool has amounted to 24,470, and of foreign to 20,818, or a total excess, compared with last season, of 45,288 bales. These remarks will be better understood on a close examination of the following table, compiled from official sources, and which shows the amount of supply derived from all quarters during the past and present years. The table must be highly important to all interested in the trade:

IMPORTS OF WOOL INTO ENGLAND IN 1855 AND 1856:

	London.		Liverpool.		Hull.		Totals, including Bristol, Leith, and Grimsby.	
	1855.	1856.	1855.	1856.	1855.	1856.	1855.	1856.
COLONIAL:	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.
Sydney	32,798	48,083	629	—	—	—	33,427	48,083
Port Philip	54,857	49,101	677	1,865	—	—	55,568	51,576
Portland Bay	8,186	4,999	—	—	—	—	8,186	4,999
Hobart Town	9,159	8,922	—	28	—	—	9,159	8,950
Launceston	7,786	6,804	—	—	—	—	7,786	6,804
Port Adelaide and Port Fairy	20,073	22,692	—	—	—	—	20,073	22,692
Swan River	1,036	1,267	—	—	—	—	1,036	1,267
New Zealand	2,047	5,734	—	—	—	—	2,047	5,734
Cape of Good Hope:								
Algoa Bay	18,346	25,758	—	—	—	—	18,346	25,758
Port Beaufort	948	1,754	—	—	—	—	948	1,754
Cape Town	5,713	6,257	64	10	—	—	5,777	6,267
East Indies	10,111	7,677	17,654	23,000	—	27	27,765	30,704
Total Colonial	171,060	189,048	19,024	24,903	—	27	190,118	214,538
FOREIGN:								
Germany	2,111	2,935	—	—	4,609	10,108	7,232	15,092
Spain and Portugal	416	182	2,424	5,070	—	—	2,840	5,252
Russia	378	537	—	536	264	2,048	642	3,121
South America	9,016	5,456	32,962	41,539	—	—	43,764	47,066
Barbary and Turkey	2,732	3,427	2,263	1,851	28	9	5,023	5,287
Syria	365	776	1,999	2,353	—	—	2,364	3,129
Trieste, Leghorn, &c.	375	470	531	2,711	—	—	906	3,181
Denmark	—	38	54	—	313	242	437	300
Chinese	690	184	103	—	—	—	793	184
Sundry	1,129	1,592	1,700	2,467	1,483	2,463	4,321	6,522
Grand Total	188,272	204,645	62,060	81,430	6,697	14,897	258,434	303,722

The above table exhibits the following fluctuations this year compared with last season:—

Colonial.

Sydney (bales)	14,656	increase.
Port Philip	3,992	decrease.
Portland Bay	3,187	,,
Hobart Town	209	,,
Launceston	982	,,
Port Adelaide	2,619	increase.
Swan River	231	,,
New Zealand	3,687	,,
Algoa Bay	7,412	,,
Port Beaufort	806	,,
Cape Town	490	,,
East Indies	2,939	,,
Total increase	32,840	
Total decrease	8,370	

Foreign.

Germany	7,860	increase.
Spain and Portugal	2,412	,,
Russia	2,479	,,
South America	3,302	,,
Barbary and Turkey	264	,,
Syria	765	,,
Trieste, Leghorn, &c.	2,275	,,
Denmark	131	decrease.
Chinese	609	,,
Sundry	2,201	increase.
Total increase	21,558	
Total decrease	740	

As regards future importations of wool from our colonies, we may observe that advices on this head are very favourable. The supply of labour has steadily increased, and agriculture has made rapid strides. Produce is found to pay even better than gold finding, and we have no hesitation in saying that the next season's imports of wool will even be in excess of the present. The disease amongst the sheep at the Cape having become less destructive, and as immigration is on the increase, that colony will, no doubt, continue to forward large supplies; but which, from their comparatively inferior staple, and from their want of that peculiar fineness suitable to the wants of many of our large manufacturers, are not likely to interfere with the value of Australian qualities. The stock of colonial wool now in London—about 60,000 bales—will be shortly announced for public competition.

AN EXPERIMENT IN WHEAT-GROWING.—Edward Wheeler, the Rocks, tested last season several kinds of wheat; and, as we have been permitted to print the result of his experience, we have no doubt that a brief detail of the facts will have intetest for our agricultural friends. Mr. Wheeler prepared a six-acre field for wheat, and thus cropped it: four acres he devoted to imported red Nottingham seed, from which, from the character he had received of it, he had the largest expectations. One acre he sowed with the kind of grain known as creeping-wheat, and in the remaining acre, the worst part of the land and the least carefully tilled, he put white satin wheat. The produce of the first, which was tilled and prepared with the greatest attention, proved to be only seven barrels to the acre. The acre of the second produced twelve barrels; but the third, from which the least results were looked for, gave twenty barrels and a few stones. But the advantage of the latter as to price was also remarkable. He prepared all at the same time for market, and having sold them together to the same person, for the English wheat he received 31s. per barrel, for the creeping-wheat 32s. per barrel, but the white satin realized 33s. 3d. per barrel.—*Kilkenny Moderator.*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

Owing to the long continuance of very unfavourable weather, the close of harvest work in the north of England, as well as in Scotland, has been delayed to a very late period; indeed, we understand that even now corn is still in the fields in some parts of the Lothians. We need scarcely observe that this state of things must have resulted in a considerable loss to the farmers, because much grain has been rendered unfit for human consumption, and no small portion of it has been so weathered and otherwise injured as to be nearly unsaleable. This sacrifice of property, therefore, must be seriously felt for some time, and we could have desired that more gratifying intelligence had reached us from other quarters; but we find that in Ireland, where continuous rains fell in the early part of the month, much of the wheat has been carried in poor condition. We are here, of course, alluding to the most backward parts of the island, because the early harvest, as was the case in this country, turned out a fair average sample of wheat. These drawbacks must, in our opinion, operate sooner or later upon the value of produce in England, and we must not forget that even our own crop, taken in the aggregate, has not been so fine as in some previous seasons. The quantity of wheat grown per acre is certainly larger than was at one time anticipated, but its poor condition has deteriorated the market value of the samples by several shillings per qr. But it is obvious that the unusually damp atmosphere experienced for fully six weeks since the time the grain was placed in stack must have greatly interfered with its condition, and until we have had a continuance of the present dry weather, we have no reason to expect better quality; without a large admixture of foreign, much of our new wheat shown during the month has been found too tender for grinding purposes. The millers have, consequently, purchased with extreme caution, and the value of such kinds has fallen 2s. to 4s. per qr. Spring corn, however, has been firm in price, with a good consumptive demand.

The progress of wheat-sowing has been by no means active, except upon well-drained farms. There have not been, however, any serious inundations to interfere with the operations of the plough. As regards the state of the trade abroad, we may observe that wheat throughout the continent is still selling at a very high price, notwithstanding that the demand of late has somewhat slackened. Evidently the continent is bare of supply, and the last crop has turned out much less, both in point of weight and quality, than was at one time intimated. If our reports are to be strictly relied upon, we shall receive very large supplies of wheat and flour from America for several months; but, with this exception, there is but a poor prospect of foreign aid before us, even though we may offer tempting prices to the growers.

Consumption is still very large in this country, and our own crop is inadequate to meet it. In the natural course of things, therefore, we have a right to expect not drooping, but steadily improving markets. Spring corn is turning out a fair average yield, but there is a great scarcity of realy fine malting barley. The malting season has now been commenced, and, as the consumption of malt liquors is large, high prices are expected to rule for a considerable period. At Mark Lane fine Chevalier malt has sold as high as 80s. per qr.

Very large supplies of potatoes continue to be received in the metropolis from Scotland and various parts of England, and we have had a few importations from abroad. The crop is now mostly raised for winter use, and the acreable produce is nearly, or quite, as large as we have already anticipated. Disease has been met with in most of the potato districts, but we believe that the losses sustained have been comparatively small—certainly not in excess of some corresponding seasons. The present dry weather is calculated to be of immense benefit to the crop.

The root crops are turning out very large and of excellent quality. Swedes especially are remarkably fine, and turnips come fully up to the expectations of the growers.

There has been a very active demand for linseed and cakes at enhanced quotations. It is now pretty well ascertained that the imports of linseed till quite the end of the year will be small, compared with the ability of the trade to purchase.

As public sales of about 60,000 bales of colonial wool will be commenced on the 6th proximo, there has been very little demand for any kind of wool; holders, however, have shown no inclination to force sales, and prices have ruled about stationary.

The growth of hops has again turned out well, and the duty has been fully backed at £250,000. Old hops have, therefore, fallen considerably in price; but new qualities have sold to a fair extent, though on low terms.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Although most of our live stock markets have been but moderately, in some instances scantily, supplied, there has been much less activity in the general demand, and prices have shown a tendency to give way; not, in our opinion, that consumption has fallen off, because we find the trade and commerce of the country in a most flourishing condition, but the comparative stagnation in the trade appears to have arisen from two causes—first, the rapid increase in the supplies of Scotch and country-killed meat received in the metropolis; and, secondly, the increase in the importations of cattle from Holstein. Then, again, we must bear in mind that the advance in the rates of discount by the Bank of England, as well as by private bankers, and the difficulties inseparable from the possession of second-class paper, have compelled butchers generally to restrict their purchases to actual wants. The large salesmen, too, have restricted the amount of accommodation frequently given to butchers; and on this latter point we may venture to disabuse the minds of many parties in the country and elsewhere who have hitherto considered that the cattle trade has been carried on upon ready-money principles only. The grazier and the feeder—all, in point of fact, who send stock to London—look to their salesmen only for a remittance, and the degree of regularity with which it is forwarded not unfrequently excites a feeling of surprise in the provinces; indeed, we feel no hesitation in saying that losses on the part of the owners of stock are seldom or never to be met with. Not so the salesman, however; he finds the money for the grazier, whether he suffers or not; but he is frequently compelled to give a certain amount of accommodation to his customers, which renders his business far less profitable than it might be. It would be useless to assume upon cash payments for every commodity which changed hands in this great metropolis, because it has been found impossible to conduct business upon such a principle, however sound it might be if carried into general practice. The restriction of credit, then, has certainly checked the late upward movement in the trade; but it is necessary to remark that there has been no want of supply, and that the demand has been steadily met. Although prices have become more reasonable, a portion of the press has violently attacked the producers of stock for exacting, as has been imagined, more than an average value for their commodity; in point of fact, the whole body has been assailed in terms of unmeaning violence. But what are the facts? The rapid progress of our commercial greatness has naturally led to an immense increase in the consumption of all kinds of food—the increase is certainly one-fourth above the use of animal food ten years since—hence the demand has for a considerable period become so extensive that, even with the aid of large supplies from abroad, it has been found almost impossible to keep pace with it. Naturally, therefore, prices have advanced; and this is one of the laws of supply and demand. Had the value of stock fallen, under such influences, we should have felt no little astonishment; and had they even remained stationary, we should have concluded that consumption had fallen off. Fortunately for the consumers, our ports are open to the admission of foreign stock free of duty, and it therefore would seem to rest with themselves whether they will purchase of the foreigner or of the grazier.

From nearly the whole of our grazing districts very favourable accounts have reached us respecting the health of the stock, both beasts and sheep. In all quarters we learn that the supply of food for winter use is immense and in good condition, whilst even now the pastures have a fair quantity of herbage. But with all these advantages, great complaints continue to be made of the weight and condition of both beasts and sheep exhibited in the Metropolitan market. Evidently, the Lincolnshire season has turned out a comparatively poor one as to quality, and from all that we can learn, there is no prospect of any great improvement in the stock until the Great Christmas Show takes place, on which occasion we are promised a large number of wonderful oxen. From the end of the year we shall be in receipt of our accustomed supplies from Norfolk. The unusually fine season for fattening is a present proof that we shall draw largely of fine stock from that quarter.

We have received about average supplies of foreign stock into London, or as follows:—

Beasts	8,871 head.
Sheep	10,502 ,,
Calves	1,280 ,,
Pigs	895 ,,

Imports at Corresponding Periods.

Oct.	Beasts.	Sheep.	Calves	Pigs.
1855	8,136	21,137	1,358	1,501
1854	6,894	16,328	1,009	1,063
1853	8,190	30,643	1,797	1,585
1852	7,792	26,672	1,350	1,624
1851	5,239	18,688	1,496	1,912
1850	5,929	20,982	1,312	1,702

The falling off in the arrival of foreign sheep has in some measure been compensated by the improvement in their weight. Most of them have carried a large quantity of internal fat, consequently been readily purchased by the butchers.

The total supplies exhibited in the Metropolitan Market have been—

Beasts	24,941	head.
Cows	457	„
Sheep....................	103,870	„
Calves	1,956	„
Pigs	3,918	„

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire have amounted to about 10,500 shorthorns; from other parts of England, 1,500 of various breeds; from Ireland, 1,960 oxen, *via* Liverpool; and from Scotland, 9 Scots. About 2,300 Irish sheep have been received in good condition, and they have realized comparatively high rates.

Comparison of Supplies.

Oct.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1855....	24,666	490	118,578	2,748	3,558
1854....	26,456	510	146,048	1,900	3,620
1853....	27,327	545	145,400	2,517	3,112
1852....	26,134	525	132,430	2,556	2,770
1851....	22,092	450	119,050	1,999	3,470

In the month just concluded, beef has sold at from 2s. 10d. to 4s. 10d.; mutton, 3s. 6d. to 5s. 2d.; veal, 3s. 6d. to 5s. 4d.; pork, 3s. 6d. to 5s. 2d. per 8 lbs., to sink the offal.

Comparison of Prices.

	Oct., 1852.					Oct., 1853.				
	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from.........	2	0	to	3	10	2	6	to	4	4
Mutton	3	0	—	4	6	2	8	—	5	0
Veal..................	2	6	—	4	0	3	6	—	4	10
Pork	2	10	—	3	10	3	6	—	4	10

	Oct., 1854.					Oct., 1855.				
	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from.........	3	2	to	5	0	3	2	to	5	0
Mutton...............	3	2	—	5	0	3	4	—	5	0
Veal..................	3	0	—	4	8	3	6	—	5	4
Pork..................	3	4	—	5	0	3	10	—	5	2

Newgate and Leadenhall have been rather scantily supplied with meat slaughtered in London; but the arrivals from Scotland and various parts of England have been extensive. The trade generally has ruled inactive at our quotations:—Beef, from 2s. 10d. to 4s. 6d.; mutton, 3s. 2d. to 4s. 8d.; veal, 3s. 6d. to 5s.; pork, 3s. 6d. to 5s. 6d. per 8lbs., by the carcase. As yet, very little prime pork has come to hand, and the prices realized for it have consequently been very high.

WEST GLOUCESTERSHIRE.

The usual indications of the autumnal changes, as compared with those of a similar date twelve months ago, denote unmistakable evidence of a favourable temperature; and as the autumn of last year was finer than ordinary, we have indeed just cause to be grateful for the delightful weather we are now enjoying. The quantity of rain that fell during the early portion of the month would have retarded the operation of wheat sowing had it been deemed expedient to have commenced at that early period; but in this district the practice of early sowing is not adopted. The dry weather that has prevailed during the last week has brought the land into a most favourable condition, and the provisions for another harvest will commence with the most gratifying prospects. Burning soil, a practice extensively adopted on the hills with the best results, is carried on successfully during the fine weather which has now set in, and a continuance of it but for another fortnight will tend materially to diminish the ill effects of a protracted winter. The grass lands without exception have never produced more abundant crops than during the present year; not only was the crop of hay above an usual average, but the after-grass has been most productive, and it still continues in a growing state. The root crops are likewise particularly good. The samples of new wheat brought to market are not generally in good order, and a considerable quantity of that which was grown on the hills will not be in a condition for the miller till after Christmas. Millers make numerous complaints about the wheat, but probably they are somewhat exaggerated when they say that it does not yield flour in proportion to appearances. Barley is a good deal stained, and there is a considerable quantity not free from sprout; for there was but little harvested before the rain. The practicability of collecting agricultural statistics is surely exemplified. Scotland and Ireland have set the good example by supplying the number of acres in cultivation under the various crops. The correspondents of this journal have given estimates of the yield of the crops in England for the present year, and all that is requisite to render the information complete is a combination of the two systems. Now that the farming community can see that nothing inquisitorial is necessarily embodied in the collection of their statistics, there can be very little doubt but they would as relates to acreage supply the required information gratuitously, in plain terms, without any act of Parliament to render it compulsory. With such information and similar returns as those which appeared in these columns on the 20th inst., a very near approximation would be made of the quantities of grain grown in England; although it would be necessary in all cases to give the estimate in the more definite form of figures. "An average crop" scarcely conveys sufficient meaning, because the question arises, What is an average crop? Again, does it refer to the locality only, or the county, or to the kingdom? All these facts require elucidation. In those cases where figures have been adopted, which amount to 64 out of 150, taking that as data for the average yield per acre throughout England, the quantity is a fraction exceeding 35 bushels; and if the average amounts to that, we have certainly very great reason to be thankful.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BLYTH FAIR.—The show of cattle was very large, but business was dull, and prices tended downwards. Sheep were not so abundant as of late, and sales slow. Lambs were very active at remunerating rates. A large number of horses were shown; good qualities sold at high prices, but inferior ones were neglected.

BRAMPTON FAIR was supplied with the usual quantity of cattle and sheep, but there was a poor show of pigs. The cattle comprised chiefly young bullocks of different breeds, some queys of small bone, and a large proportion of cows. Pleuro pneumonia, or lung disease, having broken out in several parts of the county, effectually deterred farmers from making purchases; indeed, many owners were never asked the price of their cattle, consequently there was an almost entire stoppage in that trade, and few bargains were struck at sums much below former markets. The present being rather too early for selecting the new stock, the pigs were secured in limited numbers at sums below the expectation of sellers. The lambs, which were chiefly of the smaller kind, were not much in demand; and several foals of no mean pretensions shared in the effects of a dull market.

BRIDLINGTON FAIR.—The number of cattle was larger than usual. Many dealers were present, yet the fair was rather flat, and prices generally lower.

CARLISLE FAIR.—About 6,000 ewes and lambs were offered for sale. Best Cheviot ewes averaged from 18s. to 22s. 6d. Lambs—Cheviots from 7s. to 12s.; half-breds from 12s. to 20s. Ewes were a comparatively dull sale, but lambs (especially of the better sort) sold at prices equal to any obtained during the present season. Mr. Wm. Hetherington sold one lot of half-breds (allowed to be the best in the market) for £1 a-head; and Mr. Thomas Bell sold another lot at the same figure. Mr. Hetherington also sold a number of Cheviot lambs at 11s. a-head. There was a pretty good show of cattle on the Sands; the sale, however, was considered slow.

CLIFTON-ON-TEME FAIR.—There was a large attendance of dealers and farmers, with a good show of stock of all descriptions. Nearly all were sold. There was a good demand for steers, and most of the best lots were sold at great prices. Fat beasts sold at from 6½d. to 7d.; fat sheep at from 6½d. to 7d. per lb. The pig market was well supplied, and sold at good prices. There were some very good cart horses and colts; great prices were asked, some colts being sold from £10 to £12 each.

DALKEITH, Oct. 21.—The show numbered about 4,000, being fully more than last year, and consisted of shorthorns, Galloways, West Highland stots, Irish, and country-bred beasts. There were a good many buyers from different parts of the country, but fewer farmers than have been seen here for some years, which created a dullness to a certain extent in the market. There was a want of life from beginning to end, and it was allowed to be a dear, stiff market. What appeared to be in demand more particularly was the shorthorned breed, and what was well-conditioned met with customers at a reduction of about 2½ per cent. from the prices obtained at Jetburgh and East Linton, but fully better than at Falkirk; but it was not a good market for this breed. Three-year-old shorthorns would be about 30s. below the prices obtained at this corresponding market last year, and two-year-olds and stirks were down in proportion; but contrasting the superior quality of last year, the reduction will not appear so great. It was surprising that towards the close of the market so few of the first-class short-horns remained unsold; but the secondary qualities had to submit to a further reduction of about 2½ per cent., which thinned the large stock which stood unsold at two o'clock. A few of this description were also left unsold. The better class of stirks met a fair market, but a number of good lots were turned off. There were several lots of polled Galloways, which did not meet with encouragement, but the lots that were disposed of brought about the prices obtained at Falkirk Tryst. The beasts exhibited from the country districts—stots and stirks—were in very fair condition, and the best of them were readily sold, but at no higher prices than what has been got either at markets or at their own homesteads. A few of these were also left unsold. The few lots of West Highland three-year-old stots met with a bad market; the principal lot was sold by Mr. Simon Hunter, Allanshaws, to Mr. Cathiee, flesher, Edinburgh, at £19 a head—these were splendid animals. Prices of two-year-old shorthorns ranged from £9 5s. to £16 16s.; of three-year-old ditto, from £13 10s. to £16 10s.; of shorthorn stirks, from £4 17s. 6d. to £9 15s. Irish cattle suffered a reduction of about five per cent. from the Falkirk rates, the prices obtained ranging from £6 to £14.

DEVIZES FAIR.—There was nearly the usual supply of sheep, which met a heavy trade, at about the prices made at Weyhill. Ewes sold at from 25s. to 38s. a head, and lambs at from 20s. to 30s. The trade in cattle was dull. Barren cows sold at from £9 to £15 each.

EARLSTON FAIR.—The number of cattle shown was nearly the same as last year, there being 1,300, and generally they were considered to be inferior in quality. Beasts forward in condition met with a fair demand, but for those of inferior quality sales were very dull, and prices down from recent markets, with a good few left unsold. Year-olds brought from £6 to £10; two-year-olds, from £12 to £15; three-year olds from £14 to £17 10s. There was a large show of young horses, upwards of 100, the best sorts of which sold readily. There were a number of cows in the market, but there appeared to be little or no demand for them.

GLOUCESTER MONTHLY MARKET was abundantly supplied with stock, but of very inferior quality, especially beef. There was a great quantity of sheep penned, but few good wethers, and those realized 7d. per lb.; ewes, 6½d.; beef, from 6d. to 7d., with several lots on hand at the close of the market.

HAVERFORDWEST FAIR.—Fat cattle fetched enormous prices, and the demand was still unsatisfied. Cows and calves, of which there were but a scanty supply on the fair, were in great demand, and prices ranged high—from 15 to 18 guineas each. Good steers and heifers sold well and quickly: buyers were numerous. Fat sheep were in considerable demand, and at high prices—store sheep were not so much sought after. The pig fair was unusually well supplied with fat and store pigs. Fat pigs sold exceedingly well—from 10s. to 15s. a-head over last fair, and we believe that all in the fair were sold; store pigs, too, fetched high prices, and the demand was unabated; suckers were not much sought after, although the prices kept up till the close of the fair. There was a large number of drovers present, and several butchers from the neighbouring towns.

HEREFORD FAIR was well supplied with the primest of Herefordshire cattle, and never has the symmetry of the "white-faced breed" showed to such advantage. The bullocks were splendid, and many fetched extraordinary prices. One gentleman is said to have sold ten for £300. The condition of all things offered for sale was truly admirable. Fat cows ranged from 6½d. to 6¾d., and some are reported to have been sold at a fraction higher. Good breeding stock maintained a high position. Fat sheep fetched 7d. and 7¼d. per lb. There were a good number of pigs on offer; porkers realized 7d. and bacon pigs 6½. The horse fair was rather largely supplied, but very few of the animals could be considered first-rate; yet extravagantly high prices were asked, and in some cases obtained. Cart horses generally of any pretension were priced from £40 upwards. Even for two-year-olds £30 to £35 was asked. Nag horses were in good demand, but not numerous on offer.

LOCKERBIE FAIR.—The show of cattle was above an average, but sale slow. There was also an average show of sheep for the season. Ewes, of the best quality, brought about 22s. a-head; of second-rate quality, from 10s. to 15s. Half-bred lambs, of the best quality, brought from 16s. to 22s.; second best, from 11s. to 15s. Cheviot lambs, of the best quality, averaged from 10s. to 12s. Second best, from 6s. to 9s. The fair was an average one compared with former years, and considerable business was done in both ewes and lambs. Weather dull; several showers fell during the day.

MARKET HARBOROUGH FAIR.—There was a large number of cart horses, making from £30 to upwards of £40 each, yet on the whole they might be bought on easier terms than of late. Many remained unsold. There was a large supply of cattle. The Scots were rather limited in number, and commanded higher prices. In Short-horns there was a very large quantity, and also a good supply of Herefords, which might be bought on easier terms. The number of fat ones was not so large as on former occasions. The business was flat, and the whole was not sold. The number of sheep penned was 1,387, which is under an average supply. The greater part were stores and lambs, in which a good business was done.

MAIDSTONE FAIR.—We had an abundant supply of stock, horses, pigs, &c, some of which were of good quality, and those met with a ready sale at good and remunerative prices. There were more horses and sheep than we have seen for some years past, but the demand for horses was not very good.

MUIR OF ORD MARKET.—The show of sheep and cattle was scarcely so large as at the corresponding one of last year; nor was the quality, especially of cattle, equal to what is usually seen at the Muir of Ord. Farmers endeavoured as much as possible to supply themselves with stock for wintering at last market, and the better class animals are either already in their hands or being reserved for feeding. The stock shown to-day was in good demand, and prices are up from 10s. to 15s. on average two-year-old crosses. The small scattered beasts of the Highland breed—poor stinted creatures, ill-begotten, ill-fed, and almost houseless—of which a great many were brought from the crofts on the west coast—stood desolate by all the earlier part of the day, without an offer having been made for them. The possessors expected, however, that in the evening, when all the good beasts were off the field, they, too, would get rid of their stock at a reasonable figure. Crosses, with bone enough to carry their feeding, and breeding enough to make it tell, went off very briskly at an early period of the day; and as the tendency of the market was upward, which did not seem to have been generally anticipated, there was less "higgling" about the luckpenny than usual. We heard of one pretty large lot for which a certain sum was asked early in the day and was refused, but which in the afternoon were sold for £1 a head more. We may also mention as characteristic of the buoyant nature of the cattle trade in the north, that a lot of several Highlanders which were last year bought for £11 for the lot, were sold at four guineas each. Among the transactions that took place were the following: Mr. Munro, Woodlands, sold his Cheviots at 16s. 6d.; Mr. Gilchrist, of Ospidale, sold his ewes at £13 per clad score; Mr. Mackay, Kessock, sold Cheviot hogs at 15s. each. The stock of the late Mr. Duncan, Badrain, Cheviot crock ewes, were sold at £12 10s. Mr. Fraser, Camperdown, sold black-faced wedders at £18; Mr. Cleugh, Caithness, a very fine lot of Cheviot ewes at 15s. 6d., &c., &c. Messrs. Muoro and Sutherland, Caithness, had a large stock on the field, most of which were disposed of at an early hour. Among the larger lots were upwards of thirty two-year-old cross stots, at £10; about 100 Highlanders at from £5 10s. to £7 10s. The greater part of these were for Sutherlandshire, but many were for the Southern markets. Mr. Ross of Pitcalnie bought some six-quarter-old crosses, from Caithness, at £8. Mr. Auderson, Kildrummie, bought two-year-old crosses at £14; and another lot at £12. Mr. Maclennan, Ord, sold a lot of stirk calves at £3 10s. Mr. Dudgeon, Fodderty, sold two-year-old crosses at £13 6s. 6d; and another lot at £10 15s. Mr. Oliver, Garthbeg, sold two-year-old Highlanders at £6 17s. 6d. Mr. Gilchrist, of Ospidale, sold two-year-old Highlanders at from £6 10s. to £6 12s. Mr. Scott Tullich's Highland stirks were sold at £4 4s. Mr. Ross, Torboll, bought two-year-old Highlanders at £6 10s.

PERTH ANNUAL MARKET was liberally supplied with stock, in good condition, of the different descriptions. Of cattle for wintering purposes, from 200 to 300 appeared on the ground; but prices for these, and particularly for Irish cattle of the different ages, had a downward tendency; and we found that fully one-half of these beasts did not find purchasers. Two-year-olds sold at from £6 to £9 each; and stirks, or one-year-olds, from £3 to £4 10s. each. There were from 60 to 80 milch cows. The first-class of these fetched from £14 to £18 each; and inferior sorts from £8 to £12. The fat stock sold at from 8s. to 9s. per Dutch stone, and were mostly disposed of. As to the home-breeds, for stall-feeding purposes, three-year-olds brought from £10 to £14 each, and two-year-olds (of which a large number were shown) brought from £7 to £12 each, according to size and breed; but stirks for wintering met a dull sale, and were disposed of at prices varying from £2 10s. to £5 each, many leaving the stance unsold. Generally, the market was considered dull. Prices may be quoted at about five per cent. lower than those obtained at our last market, while the reduction on some descriptions of cattle was fully 10 per cent.

ROSS FAIR.—Horses of all kinds were plentiful, but were at a discount, every one seeming anxious, as the winter was approaching, to get rid of them, although there were very few buyers. Sheep were enhanced in price, owing to the late rains, which had improved the herbage. Fat stock sold, as it usually does, well.

ROTHERFIELD FAIR was very fully attended, a great deal of stock being exhibited, the good (of which there was a considerable number) meeting soon with customers at remunerating prices; the other sorts remaining much on hand, especially barrens. A rather short supply of Welsh runts. A few samples of hops were shown, but very few sold.

RUGBY FAIR.—There was abundance of fat beef, but owing to there being a fair at Market Harborough the same day, stores were scarce. Fat mutton was well supplied, and a good trade was done. Beef 5½d. to 6½d., mutton 6d. to 7d. per lb.

SLEAFORD FAIR.—There was a large show of beasts, which realized high prices. The show of sheep was smaller than usual, but they met a brisk sale at good prices. Shearlings from 48s. to 51s., breeding ewes 36s. to 42s.; prime fat beef 8s. per stone

STRATFORD-ON-AVON FAIR.—There was a very good supply of stock, and of sheep nearly 2,000 were penned; and trade ruled dull, as there were not many buyers, which caused a reduction in price. Good beef fetched from 6d. to 7d. per lb., and mutton the same price. There was a demand for milking cows with their calves, which sold as high as £18. Pigs were cheaper, 10s. per score. Best wether mutton 7d.

SWINSTEAD FAIR.—There was a smaller show of sheep than usual, owing to Sleaford fair falling on the same day, the number penned being only 600, which found plenty of buyers at prices about equal to former fairs.

WENLOCK FAIR.—There was a good supply of beasts of all descriptions, and plenty of buyers. Cows and calves sold remarkably well, as much as £19 being given in some instances. Pigs were plentiful, and sold well, but slightly on the decline. There were but few sheep, and the prices realized were about the same as on previous late fairs.

WINCHESTER FAIR.—The supply was about an average one, and the weather being beautifully fine the sheep appeared to great advantage. The attendance of dealers was large, and a quick sale for all fleshy animals soon commenced, at prices from 1s. to 2s. per head higher than the late Weyhill fair; lambs ranged from 21s. to 42s.; ewes, from 30s. to 42s.; wethers, from 38s. to 53s. A few pens of very superior lambs were exhibited, more particularly those of Mr. Spencer, of Hinton, near Alton, and Mr. F. P. Bailey, the former of which realized 45s. 6d. and the latter 43s. per head. The lambs of Messrs. Terry, Davis, and Courtney were much admired, as also the ewes of Mr. Fitt, of Littleton, Vidler, and others, Mr. Fitt's fetching 42s. each; the two-teeth wethers of H. J. Mulcock, Esq., brought 53s. per head. The lower qualities did not clear off with much briskness, but ultimately a clearance was effected at full prices. At the horse, cattle, and pig fair, on Friday, the supply was good, and brisk trade at high prices for all, especially for pigs, which are now higher in price than at any period since 1817—nearly forty years since; Messrs. Rogers, Barnes, and Jones exhibited their usual strings of fine horses, for which they obtained from £30 to £55 each—ordinary animals were more saleable than usual, on account of the high price of the best; cows sold from £9 to £16 each; oxen from £12 to £18 each; lean hogs, from 35s. to 82s. each, fat hogs, 12s. to 12s. 6d. per score.

WOOLER FAIR.—A large quantity of sheep—of Leicesters there was not a large number. We quote the following as prices:—Wedders, 40s. to 46s.; ewes, 35s. to 40s.; half-bred wedders, 30s. to 38s.; ewes, 28s. to 36s. A very large show of Cheviots, with an extremely dull sale. Wedders, 24s. to 30s.; ewes, 18s. to 23s. There was about 1,000 head of cattle, but many of an inferior quality. Good animals sold well, others were difficult to dispose of. Far below the average number of milk cows. There was a great many horses, including a few excellent young animals, but principally of a second-hand quality. Prices we cannot quote; a good deal of dealing.

IRISH FAIRS.—TUAM: From returns made with accuracy, the number exposed for sale amounted to about 20,000, the greater part of which were sold at an early hour. All stock in good or advanced condition were sold rapidly, and at between 2s. to 3s. in advance of the last year's Tuam fair. All wedders in condition went off rapidly, as also did good maiden ewes and hoggets. As usual, stock of inferior quality were not in such ready demand, but still they brought a corresponding advance over last year's fair. All parties, both buyers and sellers, appeared highly pleased with the remunerative character of the prices of the day. The subjoined list of prices will enable your readers to form an opinion of the range of prices: Mr. J. W. Cannon sold a lot of two-year-old wedders at 47s. 6d. (this was the highest price for lots received at the fair). Mr. Charles Kelly, Ardallen, 46s. 6d.; Mr. J. D. Meldon, for 100 ditto, sold to Mr. Darcy at 44s. 6d.; Mr. Robert Bodkin, for a lot of wedder hoggets, 41s. 6d., bought by Lord Plunkett; Mr. D. Ruttledge bought 100 lambs at 23s.; Mr. Rafferty bought 50 wedder hoggets from Mr. Burke at 34s.; 20 ditto, for Mr. Rabbitt at 32s.; and about 200 two-year-old wedders at an average of 35s. Mr. Geoffrey Martyn got 42s. for a lot of maiden ewes; C. J. O'Kelly sold a lot of hoggets to Lord Clonbrock at 35s.; Mr. W. Lambert, a lot of two-year-old wedders, 43s. 6d.; Mr. Dominick Leonard got 38s. for a mixed lot of 170 two-year-old wedders; Mr. M. Glyn got 40s. for a lot of ewes; Mr. Poole for a lot of 100 two-year-old wedders, bought by Mr. Donohoe, 44s. 6d.; Mr. Commins for wedder hoggets, 37s. 6d.; Mr. Mat. Jennings sold a lot of 100 ewes to Mr. Ruttledge at 40s.; Mr. Dominick Tully sold 60 wedder hoggets to Mr. Donohoe at 35s., and a lot of ewes at 33s.; the Messrs. Carr purchased a large lot, about 300, at an average of 36s.; Mr. Gillier sold 100 wedders to Arthur Maher at 35s. About three o'clock very little remained unsold, and the fair, altogether, may be considered a brisk and remunerative one.

FARMERS' STAKES.—The members of the Monmouth Farmers' Club, at their last meeting, introduced a sweepstakes for horses the property of members of the Club, to be run for at the annual county meeting. The proposition was very well received, and a number of members at once entered their names.

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF OCTOBER.

The principal feature of the past month has been the inferiority of the condition of the wheat brought to the several markets. This has produced somewhat lower prices even for the best samples, while all below this quality have fallen fully 3s. per qr., the worst selling at rates so irregular that quotations have become difficult. The conclusion of the harvest in Scotland, the north of England, and the late districts of Ireland, under very catching weather, has added to the quantity of damp and sprouted wheat; and the hopes once entertained, in the height of summer, that we should be independent of foreign countries, both as respects the quality and quantity of our own crop, have entirely vanished. By the best information obtained, it appears doubtful whether, with an extended growth, we have anything beyond an average crop. The position of France with regard to her harvest is still less satisfactory. The Roman States remain closed, as to exports; while Spain and Portugal are making perpetual demands upon our stores. All the Baltic ports are high-priced; red wheat at Danzig was worth about 61s., at Stettin 62s. The best wheat, at Berlin, was quoted at 64s.; and at Hamburgh, red Silesian was worth 71s. 6d. per qr. In Belgium and Holland, too, the rates are beyond our own. The ports in the Black Sea and Danube have become excited: low quality Galatz wheat, on the spot, in that town, was worth 57s. 6d.; and Odessa, the great emporium before the war, complains of short supplies, with quotations of 63s. per qr. for Polish Odessa, and 67s. for Ghirka wheat. The American markets, therefore, are the cheapest: these of late have been calm, but now are gradually rising, from an extensive demand both for France and England. The exports thence have recently doubled those of last season, in ten days amounting to about 80,000 qrs. Ohio red wheat, at New York, was worth about 52s., Illinois 54s., Southern white about 58s. These prices, therefore, with a fair dry quality, must continue to bring orders: and the foreign supplies will help to work off our inferior qualities.

The foreign arrivals since harvest have considerably fallen off. At the close of July, the quantity in one week was 181,058 qrs.; in the first week in Oct. they were as low as 75,160; but they are again likely to increase. As respects future rates, it seems improbable there can be much reduction, though past experience has shown that a bulk of inferior wheat makes heavy markets. As the season advances, and the condition improves, we think it more likely that higher rates will be paid, as the partial failure of the potato crop must eventually influence prices, unless the extended growth and foreign importations overbalance the injury sustained.

The first Monday's wheat market commenced after a week's liberal supply, both foreign and English. The morning's samples, from Essex and Kent, however, being less numerous, and the quantity of really fine very limited, it was readily taken off by millers at 1s. to 2s. advance, the bulk of inferior realizing no enhancement, but being difficult to quit. The country generally responded to the advance on good wheat, it being exceeded at Birmingham and Spalding, and fully equalled at Liverpool. The second Monday, with good arrivals, and the morning's supply more deteriorated in condition, lost the advance of the previous week, and so many fine cargoes of foreign were on the market that holders on board ship occasionally acceded to a slight reduction to save the expense of storing. All the country markets, through the week, were dull, without much positive decline, excepting for parcels out of condition, many of which could not be sold. The third Monday showed an abundance as to the supply, but the condition of the English samples was still more unsatisfactory, and little progress could be made, though 1s. to 2s. less was taken. This qualified reduction took no effect on the price of fine wheat in the country, but added to the difficulty of selling what was inferior; Louth, Boston, and Liverpool showing the same state of trade, in all secondary samples. The last Monday was well furnished with foreign, and fairly with English, which was somewhat improved in condition, by the drier state of the atmosphere, which had prevailed for a full week. Millers, however, finding no lack of good foreign to suit their purpose, were as reserved as before, and wheat of the best quality scarcely maintained its price, while the late periodical reduction of 1s. to 2s. per qr. was re-enacted, on all samples deficient in weight or condition.

Through the whole month the supply of English wheat has steadily increased, with the exception of the last week, the total quantity being 51,615 qrs., giving an average per week of 12,904 qrs., and exceeding that of last month by 4,000 qrs. The foreign arrivals in this port also show an increase, the total for the month being 101,210 qrs., giving a weekly average of 25,303 qrs., an excess over the last of 7,000 weekly. The great bulk of this has been from Russia, Cronstadt, and St. Petersburg being the principal ports, though a fair portion has come from the Black Sea and Sea of Azoff. The exports have been 6,363 qrs. wheat and 6,039 sacks of flour. The weekly sales, though they have steadily progressed since the harvest, have in no instance yet reached the quantities sold in the previous season. At the close of September, they were 106,358 against 124,570 in 1855, and at the close of October 144,135 against 152,443 in the previous season. The inference seems natural, that the idea of peace has no longer any terrors to the farmer, and that aware that the condition of his crop is such as to damage his interest by forcing untimely sales, he prefers its remaining in the stack till fit for market.

Country flour has kept pace with wheat in its increased abundance: the month has produced 64,694 sacks, or a weekly average of about 4,000 sacks beyond September. The foreign supply has, however, greatly fallen off; importers here preferring to wait till a sufficiency of the new American wheat is manufactured, much of the flour of last year's crop being made of inferior and sprouted wheat, which spoilt the sale, both here and at Liverpool. With, however, a better dependence on the new samples, there is no doubt that liberal shipments will be made. The total receipts in London this month were only 13,440 brls. American, and 1,603 sacks, principally from Russia, some of which has been of extremely fine quality, exceeding the top London quotations by 6s. and 7s. per sack. The month's account of prices may be given in brief as follows:—The first Monday found a good market for both Norfolks and American at 1s. advance per sack and brl. Every Monday since has brought some firmness to the American and foreign trade, and the reverse as respects country samples, which from their more doubtful quality and liberal quantity have regularly declined every Monday since 6th Oct. at the rate of 1s. per sack, leaving the top price 47s. as more the quotations of holders than that of buyers.

The crop of barley is now generally admitted to be of an unusually restricted growth, and the yield but an average, with much deterioration by sprouting, discoloration, and damp; and prices abroad have hitherto been so kept up, that it becomes a question whether the total importation will meet our wants, or whether we shall not be driven to a liberal substitution of Indian corn to fill the void. Nevertheless high prices have shown their usual effect in checking trade, though but small quantities have appeared at market. The malting season not being commenced last month, the best samples nominally had declined to rates little above the secondary kind; but the evident scarcity of fine sorts has placed them higher, while inferior and foreign have been rather declining. The English supplies, though moderate, have nearly doubled those of September. During the month they have been 17,332 qrs., giving an average of 4,333 qrs.: the foreign, however, have fallen to about one-half of what they were, being only 13,016 qrs., or a weekly average of 3,254 qrs.—together the weekly supplies have made but 7,587 qrs., yet for all but the best samples there have been dull markets. The first Monday commenced by settling the price of the best malting parcels at 50s. per qr.; and the close of the month finds it unaltered, with an upward tendency. Every successive market made sales of inferior kinds dull, without noting a positive reduction: but to make sales of these freely 1s. to 2s. less would certainly have to be taken. Yet the known smallness of the crop, and the absence of any quantity in granary, disinclined holders to push sales or take lower rates—which are only taken occasionally to clear vessels of their cargoes.

Malt has little varied through the month. The second Monday, influenced by the scanty arrival of fine malting barley, and limitation of the stock of old malt, brought an increase of value to the extent of 1s. per qr.; and at this point prices have remained.

The oat trade through the month has exhibited scarcely any fluctuations, with more than double the supplies of September. This month they consisted of 9,935 qrs. English, 27,274 qrs. Irish, and 116,875 qrs. foreign; giving a weekly average of 38,522 qrs., against 17,121 qrs. in September. Yet prices of old have scarcely declined 1s.; though for light new out-of-conditioned samples the decline has nearly been 2s. per qr. The foreign supply has consisted of 88,574 qrs. from Russia, and of only 28,301 qrs. from other ports, clearly showing that had the war lasted, prices must have been materially higher. On the first Monday, with moderate supplies, there was a firm market, and needy buyers had occasionally to pay more money. On the second Monday came the heaviest supply; but dealers being low in stock, the bulk was cleared without any reduction, except a slight one on new samples. On the third Monday, though with diminished arrivals, dealers being better in stock, the trade generally was duller, and light new ones again gave way 6d. per qr. On the last Monday, with good supplies kept up, the quantity pressed on the market; and even old oats of fine quality were 6d. to 1s. per qr. cheaper, and new were again reduced another 1s. per qr. Irish supplies have yet kept moderate; but they must be expected to increase as the Russian shipments cease, from the stoppage of the navigation in the Baltic by frost. Prices, however, being moderate, as compared with other grain, little reduction can be looked for. The crop generally is considered a fair average, and of good quality, both here and in Ireland; but in the latter country there has been a reduced growth to the extent of 82,000 acres, a circumstance which must eventually tell upon the the markets. Beans and peas are considered to be the best crops grown this season, but many samples are damp. Of the former, foreign supplies have almost ceased, as the effect of the late closing of the Mahmoudieh Canal in Egypt; but as there has been a good crop gathered there, and free arrivals are daily noted in Alexandria, we may shortly expect liberal supplies. The arrivals of English during the month have more than doubled the last, being 3,135 qrs., though the foreign dwindled down to 240 qrs. The first Monday noted an advance of 1s. per qr.; and though no positive rise has been since quoted, buyers cannot procure select samples without paying something more.

Peas have also doubled in the quantity of English receipts last month, the supply for this being 2,289 qrs.; and arrivals from Canada have made up the foreign to 2,030 qrs. The demand for hog-feed having set in, full prices have been paid for this quality, the month commencing with 1s. advance, which has bren fully maintained. Blue peas, however, and boilers, though moderate in price as compared with maples and duns, have been a slow sale.

Linseed, from a continual demand and short arrivals, both from India and Russia, has been steadily increasing in value. The first and second Mondays noted a firmness in prices; the third and fourth were severally dearer 1s. per qr., making the advance on the month 2s. per qr. And as America is a competitor with us for the article at full rates, there is every probability of a further rise. Cakes, too, have found a regular demand at full prices.

The crop of English cloverseed has been damaged by the late heavy rains, and samples of very various quality may be expected. The few samples of foreign showing have been held at high prices. Venice seed was lately sold at 53s. to 54s. per cwt., cost and freight; and Bourdeaux has been held at 70s., free on board; North of France fine 73s., free on board. Little has yet been doing, and the crop in France is badly reported as to yield, with an anticipation of higher rates. Trefoil has been steady. Canary has risen to £4 per qr.; but the rise checks business, and the appearance of new samples may change prices. Winter tares of good quality have sold for speculation at 6s. per bushel. Hempseed has been dull, and declining. Mustardseed steady, both white and brown. Rapeseed scarcely so good sale, and inferior Dutch is cheaper. Carraway, coriander, and other seeds are but little changed in value.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter.

WHEAT, Essex and Kent, white, new	58	to 72	extra	—	to 77
Ditto, red .. „	57	65		—	70
Norfolk, Linc. and Yorksh., red „	57	65		—	70
BARLEY, new, malting..	42	45	Chevalier..	46	50
Distilling	40	43	Grinding..	34	38
MALT, Essex, Norfolk, and Suffolk	70	73		—	77
Kingston, Ware, and town made..	70	74		—	78
Brown	64	65		—	—
RYE	—	—		38	42
OATS, English, feed..	26	28	Potato	28	33
Scotch, feed	29	33	Potato	30	35
Irish, feed, white	23	26	fine	—	28
Ditto, black	22	24	„	—	25
BEANS, Mazagan	38	40	Ticks	40	44
Harrow	40	45	Pigeon	44	48
PEAS, white boilers	43	48..	Maple 42 45.. Grey	40	43
FLOUR, per sk. of 280 lbs., Town, Households 58s.,			fine	59	60
Country	47	48	Households	51	53
Norfolk and Suffolk, ex-ship				46	47

FOREIGN GRAIN.

Shillings per Quarter.

WHEAT, Dantzic, mixed..	77	79	high do.	—	81 ext.	—	85
Konigsberg	75	79	„	—	79	—	83
Rostock	74	78	fine..	—	81	—	85
American, white	66	71	red..	—	—	62	67
Pomera., Meckbg., and Uckermrk., red				73	77	75	79
Silesian, red	68	73	white	—	—	73	77
Danish and Holstein				65	68	67	72
St. Petersburg and Riga				55	59 fine	59	62
Rhine and Belgium				—	—	—	—
Russian	58	68	French			(none)	
BARLEY, grinding	27	35	Distilling..			37	42
OATS, Dutch, brew, and Polands	27	33..	Feed			23	28
Danish and Swedish, feed..	23	28..	Stralsund			27	29
Russian..						24	26
BEANS, Friesland and Holstein						40	42
Konigsberg ..	39	45	Egyptian			34	37
PEAS, feeding	40	42..	fine boilers			44	46
INDIAN CORN, white	34	35..	yellow ..			32	35
FLOUR, per sack...... French	58	—..	Spanish ..			56	57
American, per barrel, sour	32	35..	sweet			37	40

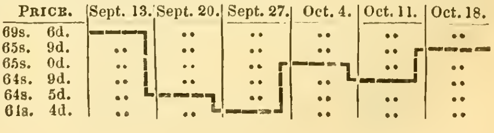
IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.		Rye.		Beans		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Sept. 13, 1856..	69	6	46	8	25	10	43	9	45	4	41	0
Sept. 20, 1856..	64	5	45	10	27	2	44	10	46	3	41	9
Sept. 27, 1856..	64	4	43	10	26	7	43	8	45	0	43	8
Oct. 4, 1856..	65	0	42	10	25	11	42	0	44	10	43	9
Oct. 11, 1856..	64	9	42	9	25	9	39	11	45	2	43	3
Oct. 18, 1856..	65	9	44	0	26	8	40	1	46	1	44	0
Aggregate average	65	7	44	4	26	4	42	5	45	6	42	11
Same time last year	76	11	36	11	28	5	48	9	49	2	45	10

COMPARATIVE AVERAGES—1856-55.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1855.		s.	d.
Wheat ...	137,286 qrs.,	65	9	Wheat....	144,869 qrs.,	76	10
Barley....	63,852 ..	44	0	Barley....	58,768 ..	38	10
Oats	13,563 ..	26	8	Oats	20,619 ..	27	9
Rye......	519 ..	40	1	Rye......	1,042 ..	50	5
Beans....	5,830 ..	46	1	Beans....	4,887 ..	49	10
Peas	1,893 ..	44	0	Peas	1,915 ..	48	7

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red, (per cwt.)	—s. to —s.
Ditto white	—s. to —s.
Trefoil, (per cwt.)	—s. to —s.
Tares, winter (per bushel)	5s. 0d. to 6s. 0d.
Coriander (per cwt.)	20s. to 24s.
Canary (per qr.)	78s. to 82s.
Hempseed (none)	—s. to —s.
Carraway (per cwt.)....new —s. to 50s., old	—s. to —s.
Linseed (p. qr.) sowing —s. to —s., crushing	62s. to 64s.
Linseed Cakes (per ton)	£10 10s. to £11 5s.
Rapeseed (per qr.)	new 86s. to 88s.
Ditto Cake (per ton)	£5 0s. to £5 10s.

FOREIGN SEEDS, &c.

Tares, old (per bushel)	5s. 0d. to 5s. 6d.
Hempseed, small, (per qr.) —s. 42s., Ditto Dutch,	46s.
Coriander (per cwt.)	15s. to 20s.
Carraway	42s. to 46s.
Linseed (pr qr.) Baltic, 60s. to 62s.; Bombay,	61s. to 63s.
Linseed Cake (per ton)	£10 0s. to £11 0s.
Rapeseed, Dutch	80s. to 84s.
Rape Cake (per ton)	£5 0s. to £5 10s.

HOP MARKETS.

BOROUGH, MONDAY, Oct. 27.—The demand for hops this morning is good, and the general tone of the market firm, with the currency steady at about the annexed quotations:—

Mid and East Kent	70s., 95s. to 112s.
Weald of Kents	63s., 84s. to 90s.
Sussex Pockets	60s., 68s. to 75s.

Duty £265,000.

WORCESTER, (Saturday last.)—The supplies of new Hops are falling off rapidly. We had very few fresh in at to-day's market, which sold readily at 4s. to 6s. advance, fair qualities 74s. to 76s., fine and choice 80s. to 84s.

WAYHILL HOP FAIR.—The number of pockets brought to the fair is ascertained, and was found to exceed that of the previous year, although the duty was then nearly double the amount expected to be realized this year. The number of pockets this year being—In the Farnham row 2,378, country, ditto, 3,500; total, 5,878. The first transaction in hops was a sale by auction of nearly eighty pockets of yearlings, stated to be sold in this manner in order to close a partnership account. Mr. Alexander, the auctioneer, with much patience, accepted the tedious biddings offered, which never exceeded 1s. per cwt., and ultimately they were sold at about 2 guineas per cwt. for Farnham's, and less than 30s. per cwt. for the Kent's 1855: they did not appear to be of very good quality. Some few purchases were made of Farnham hops on Monday, at prices from 4*l*. 10s. to 5*l*. Country hops realized from 3*l*. 10s. to 4*l*. On Tuesday business became much more brisk, but the prices did not vary much from those given on the previous day, and many larger bargains were completed. On Wednesday the trade improved considerably, especially for Farnham's, which sold readily at from 4*l*. to 5*l*. 10s.; and country's from 3*l*. to 4*l*. 10s.

POTATO MARKETS.

SOUTHWARK WATERSIDE, MONDAY, Oct. 27.—During the past week the arrivals for this market have been very small for the season, the greater part in bad condition, and a limited demand at the following quotations:—

Kent and Essex Regents	80s. to 95s.
East Lothian ditto	85s. 95s.
Perth, Forfar, and Fifeshire ditto	60s. 85s.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, October 27.—The supplies of Potatoes on sale in these markets are moderately extensive, and about an average business is doing in them, at late rates. The imports from abroad last week were 15 bags and 43 hampers from Rotterdam, 5 bags from Harburg, 9 from Hambro', 30 from Amsterdam, and 30 baskets from Harlingen.

York Regents, per ton	90s. to 105s.
Kent and Essex do.	80s. „ 90s.
Scotch do.	80s. „ 90s.
Middlings	50s. „ 60s.
Lincolns	70s. „ 80s.
Blues	70s. „ 80s.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.
Friesland	112 to	120
Kiel	110	116
Dorset	114	120
Carlow	94	106
Waterford	104	112
Cork, new	98	112
Limerick	98	108
Sligo	98	110
FRESH, per dozen..14s. 0d. to 15s. 0d.		

CHEESE, per cwt.:	s.	s.
Cheshire	64	74
Cheddar	74	86
Double Gloucester	60	68
HAMS, York	108	112
Westmoreland	104	108
Irish	86	90
BACON:		
Wiltshire, dried	76	85
Irish, green	70	74

BELFAST, (Friday last.)—Butter: Shipping price, 102s to 116s. per cwt.; firkins and crocks, 11½d. to 12d. per lb.; Bacon, 64s. to 70s.; Hams, prime, 90s. to 94s., second quality, 70s. to 76s. per cwt.; prime mess Pork, 97s. 6d. per brl.; Pork, 56s. to 61s.; Beef, 100s. to 120s. per tierce; Irish Lard, in bladders, 74s. to 76s.; kegs or firkins, 68s. to 70s. per cwt.

WOOL MARKETS.

BRITISH WOOL MARKET.

BERMONDSEY, Oct. 27.—We have no alteration in price to report, but transactions have been limited to a very small extent. Under similar circumstances years ago, when wool has been plentiful, prices have receded considerably; but of late the wool has been consumed so rapidly, and the supply has not increased in proportion, that the present depression has merely prevented a rise in prices which would otherwise have taken place. The colonial wool sales, which are to take place on the 6th, are expected to realize full rates.

	s.	d.		s.	d.	
Down tegs	1	5	to	1	6	per lb.
Down ewes	1	3	—	1	4	„
Kent fleeces	1	3	—	1	4	„
Half-bred hoggets	1	4	—	1	5	„
Leicester fleeces	1	2	—	1	4	„
Blanket wool	0	9	—	1	0	„
Flannel wool	1	1	—	1	4	„
Combing skin	1	0	—	1	2	„
Superior ditto	1	4	—	1	5½	„

LIVERPOOL WOOL MARKET, OCT. 25.

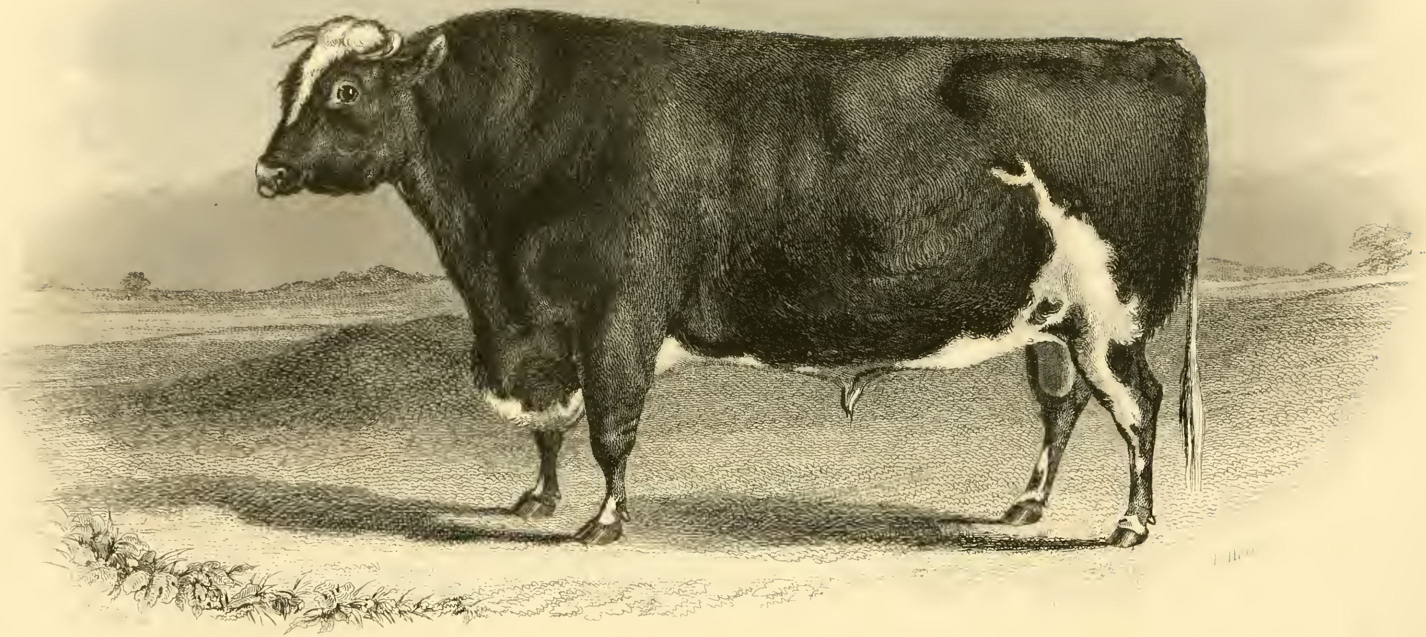
SCOTCH WOOL.—There is more enquiry for Laid Highland, and, as stocks are not heavy, holders have it a good deal their own way, and prices are fully supported. White Highland is in fair demand; Cheviot and crossed are also in more demand and at full rates.

		s.	d.		s.	d.
Laid Highland Wool, per 24lbs.		12	6	to	14	0
White Highland do.		15	0		16	6
Laid Crossed	do..unwashed	14	0		15	6
Do.	do..washed	15	0		16	6
Laid Cheviot	do..unwashed	16	0		18	0
Do.	do..washed	21	6		24	0
White Cheviot	do..do.	30	0		32	0

FOREIGN WOOL.—There has been considerably more enquiry for all kinds of long shafty wool this week, but stocks of these kinds being light the transactions are limited.

BRESLAU WOOL REPORT, October 21.—The favourable opinion for our article is continuing, and the scarcity of money influencing only in so far as speculation being doomed to inactivity, transactions are merely confined to the satisfaction of the momentary wants of manufacture. If therefore sales were on a rather limited scale, prices on the contrary firmly maintained themselves, and some descriptions, as Silesian slipes and skins in bundles, as well as Russian combing and scoured wool, even realized better prices than hitherto. The fine and superfine qualities, on the contrary, continue very heavy of sale, and may be quoted a shade lower. The whole amount of sales during the last fortnight has been about 1,200 cwts. The following prices have been obtained: for Russian combing and clothing wools, at from 70 to 76 thalers; ditto wools, scoured, 100 to 118 thalers; ditto, refuse, 55 to 66 thalers: Silesian skin wools, 78 to 83 thalers; ditto slipes fresh ones, 58 to 65.; lambs' wools, 98 to 110 thalers. The chief purchasers were home and Austrian manufacturers and combers, a wholesale buyer from Hamburg and several commission agents of town. The fresh supplies of Russian wools have in the meantime been very considerable, and amount to more than double the quantity which has been disposed of. Nevertheless, we believe that, considering the great wants of the article, our stocks will be scarcely sufficient to meet all demands till the next shipping.—GUNSBURG, wool-broker.

Printed by Rogerson and Tuxford, 246, Strand, London.

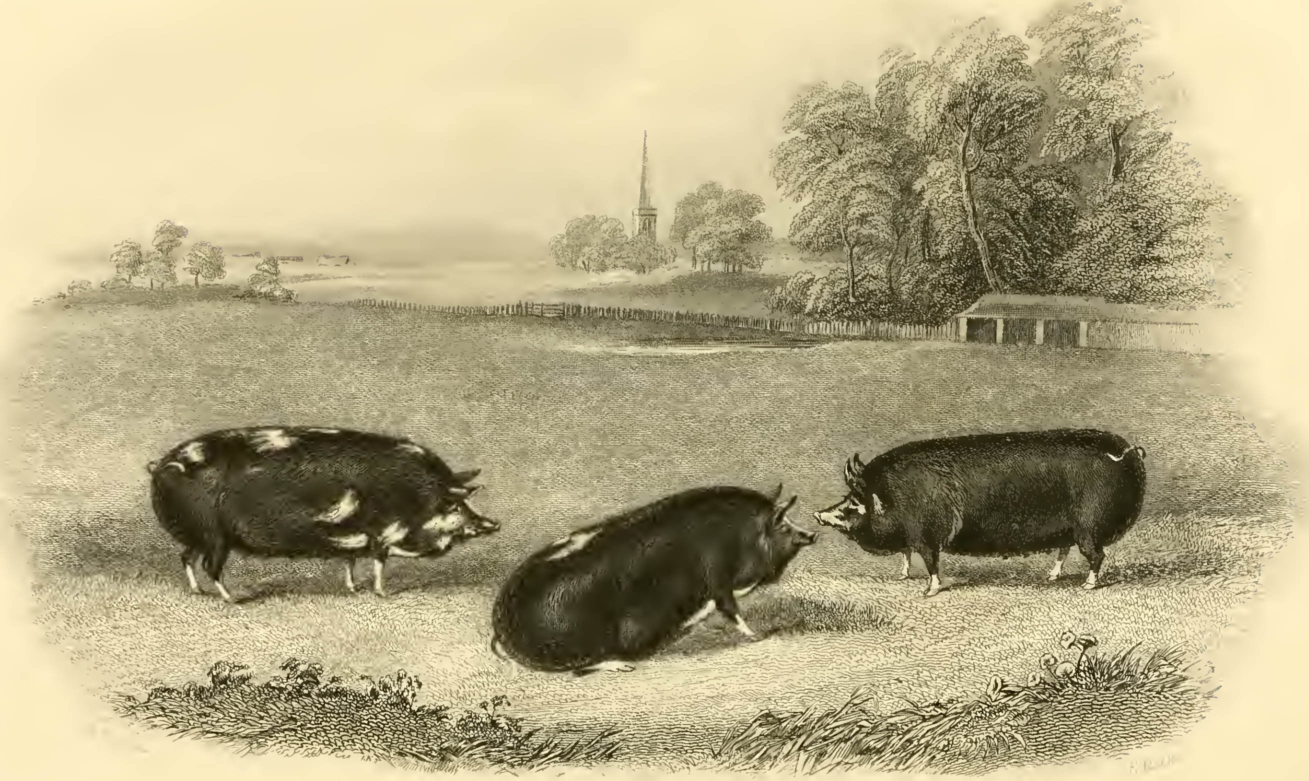


The Squire

[illegible] Bull, the Property of Richard Dudding Esq. of Panton [illegible] for which the [illegible]

[illegible] awarded at the Boston Meeting of the North Lincolnshire Agricultural Society [illegible] 1838

[illegible] by [illegible] 246 [illegible]



Specimens of the Improved Berkshire Breed

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THE FARMER'S MAGAZINE.

DECEMBER, 1856.

PLATE I.

THE SQUIRE; A SHORT-HORN BULL.

THE PROPERTY OF RICHARD DUDDING, ESQ., OF PANTON, LINCOLNSHIRE,

For which the first prize of Twenty Sovereigns was awarded at the Boston Meeting of the North Lincolnshire Agricultural Society, August, 1855.

The Squire, a red and white bull, calved August 28th, 1848, was bred by Mr. Eastwood, of Towneley, and got by Duke (9032) dam (Gipsy) by Planet (4718), g. d. (Miss Peyler) by Sal (2655), gr. g. d. (Rue) by Harlsey (2091), gr. gr. g. d. (Fortune) by Regent (2514), gr. gr. gr. g. d. (Blossom) by St. Albans (1412), gr. gr. gr. gr. g. d. by North Star (459). The Squire is a half-brother, on the dam's side, to Colonel Towneley's Gem, also a winner of many first prizes—never, indeed, having been beaten but once, and then by the Colonel's celebrated Butterfly. On the other side The Squire is a half-brother to Frederick, the sire of the still more renowned Master Butterfly; of Ringlet, and many other famous animals.

In 1854, The Squire took the first prize for aged bulls at the Royal Dublin Society's Show, held at Dublin; in the August of the same year the first prize at the Malton Meeting of the Yorkshire Society; and the first prize at the North Lancashire Society's Show, at Burnley.

In addition to these performances, The Squire has also been a winner, at various ages, of six other first prizes offered by local Associations.

PLATE II.

THREE SOWS (OF "THE IMPROVED BERKSHIRE" BREED.)

THE PROPERTY OF THE REV. C. T. JAMES, OF ERMINGTON, DEVON,

For which the first prize of Ten Sovereigns was awarded at the Royal Agricultural Society of England's Meeting at Chelmsford, 1856. These same three sows also took the first prize at the Yeovil Show of the Bath and West of England Society, in the spring of this year. Indeed, the Berkshire breed has been very successful, of late, at most of our Meetings, while it has many desirable qualifications to recommend it—amongst others, width over the back, and being well interlarded with fat and lean.

The sire of these three Graces also took the first prize in his class at Chelmsford, and the dam was very highly commended. The boar is still in Mr. James' possession. The three sows in our portrait testify to the value of the sort, not only in their quality and shape, but by perhaps a still greater essential—that of early maturity. At the time of their being exhibited their weight was twelve score each, and their age only seven months. Mr. James is deservedly well known as a successful exhibitor, renowned, like the Yorkshireman, for horse-flesh and hog's-flesh.

RAIN AND DRAIN-WATERS.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The observations of the meteorologist, relating to rain, were, till lately, of little practical value to the agriculturist. They chiefly served to illustrate, by the varying amount of rain falling in different districts, the cause of certain systems of farming being preferred in such localities, and the reason why, in some seasons, our corn crops (as owing to an unusually low mean temperature) were deficient in their productiveness. Recently, however, these observations have been carefully extended—the material effect, and the amount of water insensibly deposited in dew, have been considered; the composition of the water deposited in rain, dew, or snow has been also examined, and certain results obtained which will assuredly lead to other and still more minute inquiries. It has indeed been shown that, so far from this atmospheric moisture being composed, as former generations of chemists supposed, of pure water,—that, in fact, it constantly contains ammonia, nitric-acid, and other foreign substances, which are the food of plants; and although the amount of these is not large, yet it is quite sufficient to account for the proportion of nitrogen which some peculiarly-placed plants contain; and moreover, it is probable that plants have the power of availing themselves of the nitrogen contained in the ammonia and nitric-acid of the atmosphere, in other ways than by those which we even now commonly assign to them.

The amount of water annually deposited on the soil in dew, Dr. Dalton calculated to be equal to five inches. Now this amounts to a weight of about five hundred tons of water per acre; and however gently and insensibly this deposition may take place, it involves a supply of moisture and of nitrogen to the soil of the most valuable kind, not only from its even distribution in well-pulverized soils, but from its amount—an amount, too, which it is very possible may be more than that which would be shown by the admeasurement of the water absorbed by the plant from rain or dew. Prof. Way, in a recent paper on the composition of rain-water, and of the water from land-drains, seems to incline to this direction. (*Jour. R.A. Soc.*, vol. xvii., p. 145.) He does not, he tells us, mean to deny that the ammonia and nitric-acid in the atmosphere are all-important agents in vegetation, or that they are sufficient, without recourse to the doctrine of the assimilation by plants of free nitrogen, to account for all the phenomena observed. "What I do mean," he adds, "and what I have frequently before said, is, that we must seek elsewhere for the measure of this influence; that the rain-water does not form a trustworthy guide; and that it is in the air, rather than in the water, that we shall find the chief quantity of these fertilizing agents. The rain falls at certain intervals only. In the intervals the nitric-acid and ammonia are not accumulating: they are removed by vegetation and by the influence of the soil. I attribute to such removal far more force than to the occasional and uncertain influence of rain." There is another circumstance that points to the same conclusion. Every acre of ground which allows water to percolate freely, benefits equally by the nitric-acid and ammonia of rain." But whence comes the additional luxuriance which vegetation puts on when the land is abundantly worked? Whence the Lois Weedon crops? Obviously Mr. Smith cannot be satisfied with the ammonia of rain: he must have some from the air also; and he does get it from the air in far greater quantity than the rain could furnish.

But let us see what, after the most careful examination, is the real and varying amount of ammonia and of nitric-acid per gallon in rain-water, in each month of the year, and the quantity received from this source by an imperial acre of land. This question did not escape our friend Way's attention. The rain he examined was collected in a large rain-gauge, placed in the centre of a field at Rothamsted, four miles from St. Albans, on the estate of Mr. T. B. Lawes—the collecting surface of this gauge being equal to a thousandth part of an acre. From this table it will be seen that—as might reasonably be expected, from the effect of different winds and mean monthly temperatures—the amount of both the alkali and the acid found in the rain-water seemed to mutually increase and diminish: both obtained their maximum amount in June; and when the proportion of ammonia present in the water had attained its minimum in November, so, nearly, had also the nitric-acid. These examinations were continued throughout the year 1855, when an imperial gallon of water, falling in each month, was found to contain (in grains):—

	Ammonia.	Nitric-acid.
January	0.092	0.017
February	0.104	0.042
March	0.086	0.021
April	0.123	0.035
May	0.080	0.035
June	0.135	0.080
July	0.061	0.017
August	0.080	0.060
September	0.095	0.021
October	0.061	0.036
November	0.054	0.018
December	0.067	0.017

But when we are considering the interesting facts contained in this table, we must remember that these do not quite represent the real amount of ammonia and acid showered over the soil in each month, since the depth of rain varies so widely in every month. To ascertain the real weight which an acre of soil received in 1855, we must take another table of the Professor's, in which he has reduced into gallons the depth of rain collected in the gauge. Now this table contains, (I.) the gallons of water per acre which fell at Rothamsted in 1855, and the grains of (II.) nitric-acid, (III.) the ammonia, and (IV.) the total nitrogen in these which that rain-water contained :—

	I.	II.	III.	IV.
January	13,523	230	1,244	1,084
February	22,473	944	2,337	2.169
March	52,484	1,102	4,513	3,995
April	9,281	325	1,141	1,024
May	52,575	1,840	4,206	3,939
June	41,295	3,303	5,574	5,447
July	157,713	2,680	9,620	8,615
August	59,622	3,577	4,769	4,870
September	34,875	732	3,313	2,917
October	124,466	4,480	7,592	7,414
November	55,950	1,007	3,021	2,749
December	39,075	664	2,438	2,180
Total in lbs.	..	2.98	7.11	6.63

"If," observes the Professor, "we are to believe these figures (and my own faith in them, founded on the care which has been bestowed on the analysis, is complete), we must at once conclude that the various estimates which have been formed for the last two or three years, on the quantities of ammonia and nitric-acid in rain, are totally erroneous. We have been under the impression that this quantity might very fairly be held to account for the natural fertility of an unmanured soil. M. Barral's experiments in Paris first gave rise to this impression; and an examination of the rain falling at Pusey seemed to confirm these results. It seems now, however, that the methods of analysis for nitric-acid were defective, and that no reliance can be placed either upon such analyses or the conclusion drawn from them. In point of fact, the quantity of nitric-acid brought down by rain, instead of being much greater than the ammonia, is actually far less; and the total quantity of nitrogen in either form, as we see from our table, does not exceed 6⅔ lbs. in the whole year. This quantity is equal to 8 lbs. of ammonia, and would be furnished by 35½ lbs. of sulphate of ammonia, or 47 lbs. of guano. We can hardly, therefore, with these facts before us, continue to believe that the rain brings down nitrogen enough to account for a normal or natural fertility, or the growth of 14 or 17 bushels of wheat from year year."

In considering the amount of ammonia which the soil annually receives from rain, we must subtract from the gross amount thus rendered available by plants that portion of it which escapes in the water which filtrates through the soil into the drains. This, however, from Way's researches, is not of a material amount. Thus, in eight specimens of water, obtained from different land-drains on the estate of Mr. Paine, at Farnham, the largest amount per imperial gallon was only 0.018th of a grain. Now, as the Professor remarks, it will be thus found that the largest quantity of this alkali in any of these drainage-waters does not reach two 100th parts of a grain in a gallon. That this quantity is remarkably small, will be seen when we reflect that a gallon contains 70,000 grains; and, consequently, the ammonia will be equal to only 1 part in 3½ million parts of water. This circumstance also shows how accurate and careful must be an analysis which can afford any satisfactory result on such a subject. The fact is —and in this consists the secret of the amount of ammonia found in the eight specimen-waters examined—that we are not able to say absolutely what quantity of ammonia is present in such cases: all we can say is, that it is more than so-and-so, and less than so-and-so. Thus the number 0.018 in the table of results, we know, expresses the maximum of ammonia in several of the samples; but it may be any less number between that and 0.012, and in like manner with the others. "I cannot," adds Mr. Way, "help feeling considerable satisfaction at a result which so completely bears out my conclusions with regard to the absorptive powers of the soil for this alkali, as does this comparative absence of ammonia from drainage-water. At all events, there is practically no loss of ammonia from this cause. It does not, in fact, exceed half-a-pound weight per acre, in the whole year."

In the instance, however, of the nitric acid found in drainage-water, the amount detected in the specimens was much more considerable, the amount per gallon varying from 1.95 grains to 14.74 grains. The presence in some proportion of nitric acid in drainage-waters seems to be universal; for of 20 specimen-waters examined by Way, not one was found free from it. Now this, as he remarks in another place, is a double evil, inasmuch as it necessarily carries with it some one or other of the alkaline bodies. The proportion of nitric acid per gallon in such waters is not constant. In the case of one of the Farnham drainage-waters, the maximum amount detected was, in December, 11.45 grains per gallon; in April it was only 7.57 grains. We may therefore, perhaps, fairly consider, with the Professor, that the average proportion of nitric acid, as regards this field, would be —say 9 grains per gallon. Then, as to the amount of nitric acid thus carried away, the quantity of water yearly passing through the drains from the field was about 240,479 gallons. This, allowing 9 grains of nitric acid to the gallon, is equal to about 309lbs. of nitric acid—a quantity, to replace which would require the acid contained in about 4½ cwt. of nitrate of soda, at an expense of—say £18 per acre.

Such, then, are some of the atmospheric sources from whence the soil derives its nitrogen, and parts with a portion of it in its drainage-waters. From such sources, also, the growing plant derives a portion of its nitrogen; but in all reasonable probability, there are other atmospheric means of supply, with which we are at present only very partially acquainted, or utterly unacquainted. It is yet a disputed question whether plants derive any of their nitrogen from the free atmospheric gas with which they are surrounded—a mode of supply so direct, and so evident to our common idea of direct operations, that it is difficult to believe that it is otherwise; but, supposing that it is not so—admitting that the 79 per cent. of nitrogen of which the atmosphere is composed, so far as plants are concerned, is entirely passive—exercises no direct influence upon their growth—even then, there are other sources of atmospheric supply, besides those found in the ammonia and nitric acid of rain-water. There is no reason to believe but that both these substances, which are found in rain and in snow-water, also exist in dew and in the insensible atmospheric moisture whence it is deposited. We have no reason to believe but that plants not only have the power of absorbing that insensible moisture, but that they may also absorb from that vapour its ammonia and its nitric acid, even without at the same time absorbing the matter with which they are combined. Other researches seem to illustrate this supposition. M. Saussure long since showed, by the result of his experiments, that, as regarded other saline solutions, a plant possessed the power, when its roots were placed in them, of absorbing the water without the salt, the salt without the water in which it was dissolved, and, moreover, that, when several different salts were dissolved in the same water, then the plant separated one or more salts from the water, leaving other salts untouched in the solution.

It is towards the conclusion of the valuable paper of which I have so copiously availed myself on this occasion, that Professor Way seems to glance at some of these things, and draws the farmer's attention to the more prominent practical suggestions to which these examinations tend in the application of manure and the use of land-drainage water for the irrigation of grass-land. We find, then, he retrospectively remarks, that through every acre of land, whether naturally or artificially drained, there passes annually a quantity of water equal to 42.4 per cent. of the rain-fall; and that, where this latter is 25 inches, the quantity of drainage-water is equal to about 240,000 gallons in that space of time. That, even where the land is very highly manured, this large quantity of water removes from the soil only inconsiderable quantities of the most important mineral ingredients of soils—namely, *potash* and *phosphoric acid*. That the quantity of *ammonia* carried off from land by the drainage-water is also of no moment; but that nitrogen, in the form of nitric acid, is, especially in highly-manured land, to be found in very large quantity in the water of land-drainage. That the quantity of nitrogen, in the form of ammonia and nitric acid, in river-water, is very much smaller than has been supposed, and quite inadequate of itself to account for the natural fertility that has been ascribed to it; and that it is to these substances, as existing at all times in the air, and absorbed from it by the soil and by plants (especially the former), that we must look for an explanation of such natural phenomena. That the quantity of ammonia in rain is greater than in drainage-water, which sufficiently attests the absorbing power of the soil for this alkali; but that the nitric acid in rain does not account for the quantity found in drainage, even in the instances where it is present in the smallest quantity. That, in all probability, this nitric acid is due to the oxydation of the nitrogenous matter of manures, and especially takes place where such manures are of a nature to prevent their perfect admixture with the soil.

The practical conclusions to which these important inquiries lead are—the more perfect admixture of manures with the soil; and, perhaps, the more frequent application of certain fertilizers, in smaller proportions, rather than by copious dressings at more distant periods. Such arrangements would surely tend to diminish the escape of nitrogenous matters in the drainage-waters. To *recover* those matters from the land-water, its employment in the irrigation of meadow-land seems to be an excellent, and in many situations an easily-available, improvement. The fertilizing powers of such surface-drainage water upon grass-land has, indeed, been experimentally determined by Mr. Paine, Lord Hatherton, and others. These researches, too, all serve to lead us to the conclusion that the influence of the atmospheric gases and aqueous vapour, with the foreign matters which they contain, upon growing plants, is much larger than we always pause to consider; and, moreover, they also justify the very reasonable conclusion that, by the freer circulation of the air through the soil than by any mode which has yet been accomplished, still larger crops are yet to be gathered by the agriculturist than even those which already have so well rewarded his skill and his unconquerable energy.

THE WINTER MANAGEMENT OF CALVES AND YOUNG CATTLE.

The breeders and owners of calves (weaned calves) and young stock have generally at this season of the year need of great caution and care in their management. Thus far, with but trifling exceptions, the weather has been fine and open, and the temptation to allow them to remain in the fields has been great; and where it has been yielded to, we cannot think the parties very censurable, but we are far from commending them. It is now, however, high time that the young cattle were got into warm, well-sheltered yards, and the calves were safely housed.

Young calves at this time require close and peculiar attention. Exposure to cold rains, or the feeding on frozen pasturage on rime-frosty mornings, is almost sure to bring on hoose or scouring, most probably to end in pleuro-pneumonia, in these epidemic days. The same remark applies to older stock, but not quite with equal force, as they have more strength of constitution to withstand the change. Calves are occasionally to be seen running with their dams throughout the winter in the open fields, and feeding on the rough herbage. This cannot be too strongly condemned. Calves require equable warmth and nutritive food to keep them in a healthy, progressive state. The cold of winter and moderate exposure may conduce to hardiness; but it greatly retards their growth, and renders their rearing unprofitable. Young animals of all kinds ought to be kept constantly progressing. This is the great secret in promoting early maturity.

Young cattle are also often seriously injured by exposure to inclement weather, and by partaking of cold, icy, or wet herbage. This may, and ought always to be, avoided; and if more forethought was exercised by our stock-masters, the practice might altogether be dispensed with. The farmer must use his best judgment in making timely provision for them against the return of this period. A few roods of early turnips or carrots, or even rape, would suffice; and may without difficulty be cultivated and obtained on all farms. This, with good straw or pulse, will do very well for the first change from grass. It is a good practice to lead portions of this varied produce into the field; the feeding such on grass makes the transition from grass to turnip food less difficult, and it is soon not unpalatable.

The calves and young stock are now all safely provided for, in their warm houses and yards. As the season advances and the cold becomes more intense, better and more congenial food should be given. The quantity of turnips, &c., allowed should be moderate, and regulated by the apparent requirements of each animal, and a small portion of linseed-cake should be given in aid thereof. The straw, also, should give place to hay; but if that is impracticable, the straw should be cut into chaff. It should then be steamed, and be mixed with linseed porridge, and given to them three times per day, at regular intervals.

Cleanliness in the management of calves and young stock is indispensable. No more food should be given them than they require or can be eaten, their cribs should be kept clean and sweet, and they should be supplied with abundance of litter. Their water should be free from impurities; and if skim milk or linseed porridge could be supplied to the calves, all the better. As they increase in strength and growth they may be well sustained on very ordinary food. The writer's older calves and yearlings during the past winter were profitably carried through it by being fed on a moderate allowance per day of sliced mangel wurzel, and plenty of good, sweet straw. The mangels were sliced by Gardner's turnip-cutter, and the straw was supplied in over-abundance; the refuse serving for good lairage in the hovels where they were all tied up. Occasionally symptoms of looseness or scouring would show itself in individual cases: if so, immediately the allowance of mangels was stopped, and a small quantity of bean or pea meal substituted with good effect. In upland or mountainous districts, where straw is scarce and green crops not much cultivated, the breeders have generally to depend upon hay often coarse and inferior in quality. We cannot too highly commend to such breeders the free use of linseed-cake, oats, or bean and pea-meal: they will reap great benefit in the improved condition of their stock, which will amply repay the outlay, besides the increased value of the deposited manure. I have said that my young stock were tied up in hovels. This was for warmth and convenience; but I am free to confess that it has its disadvantages. Young stock require exercise to promote their full development and healthy growth: confinement is injurious, and however judiciously their food may be regulated to their wants.

various little ailments will intrude. Warm well-sheltered open hovels are preferable, where they can range at pleasure.

Young cattle of the second winter, if satisfactorily grazed during the summer, will do well in the open fold-yard, with a plentiful supply of good straw and one or two feeds of turnips per day. A shed, however, should be provided, to shelter them in stormy weather. As spring begins to show itself, the mangel wurzel crop may be resorted to with very beneficial effect; but if given during cold wintry weather, scouring will take place, and serious loss in condition will ensue just at the precise time when the breeder is looking to have them all hardy and right to turn to grass. This must be watched and avoided. The mangel-wurzel root abounds so largely in water as to be unfit food for young stock in cold weather. In the warm spring months it is superior to any other root, as healthy nutritious food for any kind of stock. This ought to be borne in mind by every stock-master, and used accordingly.

The more common diseases to which calves and young cattle are subject during the winter are catarrhs, or hoose and scouring: both require careful watching and prompt treatment. In the first case the cold and cough may soon get such a radical hold upon the lungs and system as to be incurable. Bleeding and mild purgatives must be resorted to, with warm mashes, warm drinks, gruels, &c., and good sheltered hovels. In the second case, scouring, the bowels become so relaxed from inflammatory action, that great danger results. To remove this, good nursing and warmth are very conducive to restoration; but medicines must be administered, which should consist of mild astringents—catechu, chalk, decoction of oak-bark, opium, will form the chief ingredients, any of which may be used in great moderation. Gruels made from wheaten flour, astringent food, and, in some cases, a slight bleeding is useful. In severe inflammatory cases, or in any serious ailment, it is best to send at once for the veterinary practitioner, and place the case in his hands; but in all common cases early attention, good nursing, and change of food are the best means of promoting recovery and restoration to permanent health.

ON THE MORAL AND SOCIAL CONDITION OF THE FARM LABOURER.

The advancement of the social and moral position of the agricultural labourer has ever been a theme that philanthropists delight to dwell upon. The legislation that produces the greatest amount of happiness to the greatest number is that which our profoundest philosophers have advocated. Still the contemplative mind, looking back over an extended space of time, finds neither their moral or social position but little improved. Although it must be confessed that education has progressed within the present century more than it had done in the whole of the preceding one, still it is mortifying to find that we have a class upon whom it has hitherto made so small an impression. Viewing this as better educated, with the same propensities existing for drunkenness and dishonesty, the inquiring mind naturally asks the question, Why is it so? Why has good seed fallen upon places where thorns and briars alone have sprung up and choked it altogether, or have so retarded its growth that a stunted plant alone remains, to mark the neglect of cultivation rather than to exhibit its good effects? The subject was lately discussed by the members of the Central London Farmers' Club, and the existence of the evil fully demonstrated; but, in my humble opinion but little was elicited towards effecting its cure. I therefore shall endeavour, from the opinion of the various speakers, to exhibit the position that the labourers are occupying, as the better mode of suggesting a remedy.

First, as regards education: it appears from the statements that it has been better and more extensively carried out than formerly, especially, as was asserted, by the instrumentality of the clergy. Mr. Baker stated that, in the parish in which he resided, education was available to every child, insomuch as they had excellent charities, aided by subscriptions of individuals, to fully effect the object; and, although he confessed to its influence upon the character and demeanour of the girls, he was sorry to state that but little, if any, benefit appeared to be derived by the boys. This he attributed to the neglect of the parents of the latter, who suffered their children, after having finished their education at school, to become at once masters of their own time—leaving them in the long winter evenings to wander up and down after sunset, without any personal control whatever exercised over them, frequently themselves retiring for the night, and leaving their children up, exposed to the various temptations by which they were surrounded, of which the ale and beer houses were not the least. Thus the benefit of the education they had received was literally thrown away, and the good they had derived at school was lost or rendered abortive.

The twig may be rightly bent in the outset, but if afterwards left uncontrolled it inevitably reverts to its natural condition; and so it is with boys first set free from school, and left to follow the bent of their own inclinations. All the good they might have received would become supplanted by the evil that would be induced by such neglect; and, therefore, it becomes evident that the antidote would require to be applied from the time of leaving the school until habits had become formed, and the young labourer had arrived at a position to enable him to resist the temptations by which at that period he would become surrounded. Everyone having a family has always viewed that period of life as the most critical, after their sons have quitted the school, and been placed under the control of others, who probably take little interest in their moral conduct and welfare. That is the season in which the future conduct of the man is developed; and, alas! how many a parent has had to deplore the misconduct of those to whom he had confided the integrity of his child! And if, with all this watchfulness and care, such ill-success follows, who is there that need be astonished at the defects in the moral and social condition of our farm-labourers, who are left in early youth without protection, and who, unfortunately, imbibe the contamination of the beer-house, as well as the seductions of the expert poacher and petty thief?

Upon taking a retrospective view of the subject, I bring back the memory to a period when farm servants were boarded and lodged in farmhouses to a considerable extent. The practice, however, has been declining for eighty years and upwards; still within the district in which I early resided, and in the family of which I was then a member, three men-servants were regularly boarded and lodged. But the irregular habits that had been induced by the circumstances of the war, and the high amount of wages paid to labourers at that period, so far influenced the conduct of servants, that it was found impossible to exercise the ordinary and necessary authority over them; until at length, about the year 1800, they were discontinued altogether, and weekly servants substituted. The working of the old poor law tended also to greatly encourage this evil. Parish allowance, in part payment of wages, rendered the young men reckless; the earnings of the summer and autumn were squandered in a heedless manner, and in the winter they depended upon the parish funds for support, and too easily succeeded in effecting that object. These habits induced apathy and disregard of the future. The wages obtained on the Saturday were squandered by Monday, and the maintenance requisite for the ensuing week was obtained upon credit at the shops until the recurrence of another payment; when the same result again took place, the larger portion of the wages being squandered at the alehouse.

At the termination of the war, the whole agricultural system was unhinged. In many parishes a moiety of the labourers, from October till April following, were for several years together without any regular employment; and these were chiefly the young men, the farmers discharging them in preference, as their support cost them less from the rates than would have been the case if the married men had been discharged. Consequently, from the year 1820 to the year 1836, the time of the new poor law coming into operation, in almost every parish a large proportion of the young men were destitute of employment, and derived their support in part, or entirely, from the parish funds; and as their applications for relief before the magistrates were generally successful, but little, if any, control could be exercised over them. In the parish in which I resided, I have seen them go directly from the pay-table of the overseer to the public-house, where they continued almost without intermission until the time of closing, when the time of church service had arrived on the following Sunday, at which time I have observed them coming forth in parties of from ten to twenty together, and, after strolling about the village during the time of divine service, were to be seen again entering the public-houses as before. The habits formed at that period by those who were then young men are represented by those who are now the heads of families; and with such training, who could expect anything but reckless and careless conduct as regarded their children, especially as it affected their *moral and social condition*?

At the period referred to, the public brewers had succeeded in monopolizing nearly all the public-houses, and trash of the vilest description was sold under the name of beer. To remedy this evil the Legislature, with the best intentions, passed the law for licensing houses for the sale of good wholesome home-brewed beer. But this was no sooner done than houses were opened in every village for the sale of beer to be drunk upon the premises, and chiefly by the common brewers themselves; thus extending their monopoly, and at the same time giving an encouragement to drunkenness, by bringing their heady compounds directly to the doors of the labourers, who could nightly frequent them without the slightest inspection by others of their conduct. And thus it is that such places are nightly resorted to by the young men, as the blazing light of the fire within and the boisterous mirth of the inmates testify to passers-by. To show its effects in the parish within which I reside—entirely an agricultural one, with the exception of an extensive brewery that supplies the whole of the public and beer houses within its limits, and with a population of 3,000 only—there are at the present moment seven publichouses and six beer-houses, which, assuming that the occupiers of the former, to cover their charges for rent, taxes, rates, firing, and housekeeping, must realize £100 per annum each, which it is only fair to presume, as their rents alone are from £15 to £30 each; and putting the beer-houses at half that amount, or £50, we have the large sum of £1,050 to be realized yearly from a population of 3,000 persons. Therefore, assuming the profits to be 33 per cent., this sum will represent upwards of £1 per head upon the whole population. But as in my knowledge not any, or scarcely any, of the farmers enter these publichouses, nearly the whole of this expenditure must be derived from the mechanics and labourers alone.

With such parents and instructors of the young, how can it be expected that the mere school education bestowed upon their children can produce any sensible benefit. That an improvement has lately taken place I feel certain. The young men of the parish referred to are far better disposed than was the case twenty years ago; and I trust that when the present generation has passed away, a better state of things will take place. Nearly all the young men of the present day can read and write; they begin to appreciate home-comforts; and although addicted to drinking, it is not continuously for days together, as was formerly the case: and, with strenuous exertions, I hope to live long enough to see a still further reformation, and which, I believe, might soon be accomplished if the farmers could be induced to co-operate by only interesting themselves in the matter; and no doubt exists that if the labourers found such was the case, they would almost of necessity copy the example so set before them.

In every parish, teaching should be carried out both by daily, Sunday, and evening schools. The parents themselves would be influenced by their employers if a lively interest in their welfare was exhibited by them; above all, the habit of frequenting the beer-houses would be broken through. And if the good so desired should not at once become apparent, the good seed would soon become fruitful; and having once effected an impression upon the parents, it would inevitably follow upon the children.

In conclusion let me state, that everyone who fills a station has a public duty to fulfil. The whole system of civilization is maintained by the united efforts of the well-disposed and rightly-directed; but if that does not appear of itself sufficient to stimulate us to exertion, the moral duty of every true Christian points out the way; and we ought to reflect, as our years are fleeting, that "the harvest may pass, the summer may end, and still we may not be saved." Every one of us has a duty to perform; and, before it is too late, let it at once be commenced. The greatest blessing we can derive in this world is a consciousness of having done our duty, and thereby to have rendered ourselves worthy of our Christian vocation.

I am, sir, yours faithfully,

Agricola.

THE CATTLE TRADE AND MEAT SUPPLY AT HOME AND ABROAD.

The supply of animal food and of fresh meat for our population is an important item of production and trade, and the traffic necessarily increases with the growth of the population, the increasing aggregated masses in large towns, the higher wages now earned by the labouring and manufacturing classes, and the more general diffusion of wealth among the bulk of the people.

The efforts of the graziers, important and progressive as they have been, are quite inadequate to meet the increasing demand, and hence we find that the live-stock imported increases year by year. In 1850 we imported 217,247 head of all kinds, while on the average of the last three years the number imported from the continent has been 326,206 head annually. But it is chiefly in the cattle (oxen, cows, and calves) that the increase is manifest, the number imported having risen from 66,462 in 1850 to 97,525 in 1855.

Confining our attention at present to cattle, and using the imperfect data at command, we may enter into a few calculations which will prove interesting at this season. In 1851 the cattle in Great Britain were estimated to amount to 4,500,000. For the present year we have the returns for Scotland and Ireland, which amount in the former country to 974,816, and in the latter island to 3,584,723 head. It is generally considered that about a fourth part of the entire stock is annually slaughtered for consumption, and we may therefore take it at two million head of cattle. It is to the large towns that cattle, live or dead, are chiefly brought for consumption. The number of beasts shown at the Great Christmas Cattle Market has not very largely increased, but the weight and quality of meat are widely different from what they were some years ago. If we take the second important town of the kingdom—Liverpool—we find the cattle trade there of a very large extent; upwards of 1,000 beasts are killed there weekly, besides other stock. The Liverpool cattle market is chiefly supplied from Ireland; the number of cattle and calves imported there by sea, in 1852, amounted to 176,000. In addition to these, large quantities are brought by railway from Scotland, and a few driven in also from the immediate neighbourhood. At Newcastle the cattle brought to market the last few years have averaged about 39,000 head; at Manchester, about 91,000 head; at Glasgow, 32,000; and at Wolverhampton, 25,000 head in the year. We are speaking only of oxen and calves. In Newgate and Leadenhall markets the supplies of meat now reach about 70,000 tons per annum, whilst throughout the kingdom the aggregate weight of butchers' meat consumed cannot be less than 750,000 tons a year.

Mr. Ormanby, so official on the London and North Western Railway, computed, in 1853, the cattle traffic passing over all the lines of railway of the United Kingdom at 1,253,353 oxen and 181,925 calves, the aggregate value of this stock being over £14,000,000: this is omitting pigs, sheep, dead-meat, &c. In many things connected with food our knowledge is but conjectural, from the want of precise data, or any means of procuring accurate statistics; but whenever correct returns can be obtained, it is exceedingly desirable to place them on record, for future comparison and reference.

Our neighbour France has been increasing her imports of cattle and sheep, for while the number of oxen and cows received in 1854 was 90,946, in 1855 they numbered 113,469 head; so with sheep the increase was from 272,610 to 308,961. There was, at the same time, a large increase in the imports of meat, fresh and salted. The quantity imported in 1854 amounted to 59,805 metrical quintals: in 1855 it had increased to 105,028 quintals.

Although double the number of cattle are slaughterd yearly in France that are killed in the United Kingdom, yet, comparing the weight of meat, the proportion is largely in favour of British cattle. M. de Lavergne, in his recent work on our rural economy, estimates the average weight of British cattle at 625 lbs. and those of France at only 250 lbs. At 5d. per lb. the value of the beef produced in France annually would be but £16,000,000, whilst that consumed in the United Kingdom would be worth more than £20,000,000. One hundred and fifty years ago the average weight of a beast at Smithfield market was not above 370 lbs., now it exceeds 800 lbs.

The gradual increase in the price of meat in France has been very great. From 1700 to 1763 the price of meat for 2lbs. was 5 sous; from 1763 to 1812, 9 sous; from 1826 to 1846, 11 sous; 1846 to 1853, 18 sous; and since that period there has been a further increase of nearly 50 per cent. The government has, therefore, been directing its efforts, by regulating prices and revising the tariff, to keep down prices. Compared with the British prices of meat, those in France are, however, low; but then the quality of the meat is most inferior. The duty on salt meats was also reduced, and larger importations have been made into France. There are about 600 butchers in Paris, and they are under great restrictions. A code of government regulations fixes distinct prices periodically for the various parts and joints of the same carcase.

The average quantity of animal food of all kinds consumed in France is stated, on good authority, that of M. Payen, to be as low as one-sixth of a pound per diem to each person. Even in the cities and large towns, especially Paris, the amount of food upon which a Frenchman lives is astonishingly small. An Englishman or an American would starve upon such fare. In France, in 1840, 3,699,200 cattle and calves were slaughtered. The population of Paris may be taken at 1,250,000.

If we cross the Atlantic, we find the city of New York, with its population of 600,000 souls, consumes on an average half a pound of meat a day to each person, or nearly 49,000 tons of flesh annually. Some returns given in the New York papers state the annual average consumption at 184,826 oxen, 12,014 cows, 543,445 sheep and lambs, 41,844 calves, and 281,051 swine. The number slaughtered in 1853 was 191,766 oxen and cows, and 32,738 calves; the beef cattle averaged net about 575lbs., and the meat fetched 8 cents a pound. In proportion to its population, New York annually consumes as nearly as possible the same quantity of meat as London; more beef, however, is used, and less mutton, and the latter fact may be accounted for by the comparative inferiority of quality. Some of the cattle grazed on the prairies of the Western States are splendid animals. The average weight of each animal of the fine cattle herds usually brought to New York market from the Far West is stated to be 1,400 or 1,500lbs.; but some reach nearly double that weight. A Mr. B. F. Harris, of Champagne, Illinois, recently sent to Albany by the Central railroad 34 head of stock, averaging 2,400lbs. In the year 1849, this gentleman stall-fed nearly 1,000 head of cattle, taken in from the rich prairies of that State, and in 1853 he fed and sold a hundred head of cattle which averaged 1,966lbs.; this lot having carried off the first premium at the New York Show. The weight of meat will, however, seldom exceed half the live weight. In New York bullocks are seldom or never put upon the scales to determine the price to the butcher. The average weight of cattle, properly termed "beeves" in the New York market, is now about 700lbs.

In 1855, the quantity slaughtered was 172,000 oxen, and 10,720 cows and calves, and the price of meat was 9½ cents a pound. Philadelphia slaughters about 90,000 head of cattle, and the total number of cattle consumed by the town population of the United States is set down at about 800,000 head, valued at £8,000,000.

The statistics we have given of slaughtered animals presents a startling and sanguinary array of facts of especial interest to the grazier; for we have in the present instance looked chiefly into the cattle trade. Few of us think, as we sit down to our rump-steak or pork-chop, our sirloin or leg of mutton, of the awful havoc of quadrupeds necessary to furnish the daily meals of the millions. If the hecatomb of animals we have each consumed in the years we have lived were marshalled before us, we should stare aghast at the possibility of our ever having devoured the quantity of animal food, and sacrificed for our daily meals the goodly number of well-fed quadrupeds of the ovine, bovine, and porcine races.

DRYING OF GRAIN.

There has rarely been a season of harvest in Scotland more calculated than the present to excite the anxiety of the farmer, or to put into peril the interests of the consumer of grain, and it has been difficult to look at the crops of wheat and barley drenched by the rains in the last days of September and in the commencement of October, and in the best parts of Scotland, without asking the question, whether no means can be found to prevent the food of man being destroyed to such an extent, and the just hopes of the best farmers disappointed? The quality of all grain crops must necessarily depend primarily on the season and sunshine by which they have been ripened; but it rarely happens that the quality and sample are seriously deficient, if the moment the crops have ripened they could be secured against the subsequent risks of the season. After the period of ripening has come, it may b asked, to what amount of deterioration is the crop liable? It is to be feared that in Scotland, at least in the present year, that amount is very serious. It may be assumed that the quarter of wheat in perfect condition is worth, at the present time, at least 70s. Its possible deterioration from such a harvest as we have lately had, may be taken at any sum varying from 1s. to 20s. a quarter; indeed, if the wheat has sprouted in the field, it is lost as the material of bread, and is saleable only at a low rate for other purposes.

The question is, Whether at a cost, which it is reasonable to incur, the wheat crop can be saved from the risks of the season, and its quality preserved at that standard of excellence to which the season may have matured it. It is similar to a case of insurance—a sum to be paid to cover a risk—uncertain in its degree, but the insurance certain to cover the loss, whatever it may be. My belief is, that such a system is attainable, and if it be, it ought to have a fair trial. It seems to me that it might consist in the following scheme of operations:—

1. A field of wheat to be cut the moment it is ripe, irrespective of the state of the weather, it being immaterial, so far as the crop is concerned, whether it rains or does not rain; to be cut by the scythe, and at a cost of about 8s. per acre.	£ 0	8	0
2. Each scythe to be followed by about 8 women or young persons, whose duty it shall be, by means of a short knife, as the grain falls from the scythe, to separate the ears from the straw, at a cost of about 8s. per acre	0	8	0
3. The ears of wheat to be immediately put into sacks or carts properly fitted for the purpose, and at once carried to a drying-house at the farm buildings.			
4. The drying-house to be a barn or other building, properly fitted with an apparatus for heating it *with currents of dry air*, of a temperature of about 120°. This temperature would expel all water and moisture from the ears of wheat in 4, 5, or 6 hours, according to circumstances, create a condition in which the grain would keep in the husk in the best manner, the sample being the best which the season had produced. All risk is from that moment at an end. The cost of the fuel required for this process could in no case, it is believed, exceed 1s. per quarter, in many cases only 6d., and labour 6d. or 1s. more; in all per qr.	0	10	0
Total cost per acre	1	6	0
But from this sum falls to be deducted the cutting down of the crop in the ordinary way, say ..	0	10	0
Total extra expense for 1 acre producing 5 quarters of wheat	0	16	0

Nearly 3s. 2d. per quarter, or 5d. per bushel.

This sum is to be placed against the possible deterioration in the quality and consequent money value of grain exposed to all the vicissitudes of weather. Is it reasonable to cover a risk and secure a certainty at this cost? In the case of Scotland in the present year, the answer no doubt must be, that over a wide extent, the actual loss incurred far exceeds the cost of the remedy proposed.

It may be stated that an excellent and powerful heating apparatus may be erected for about £40. The cost of separating the corn from the straw is taken at 8s. per acre (assuming 5 qrs. of grain), the probability is that in practice it would cost less money. I have a strong persuasion that the whole operation would be practically accomplished for less rather than more money than has been estimated, and the larger the scale, the smaller must be the cost of the drying process—at all events, something between 4d. and 6d. per bushel.

Another consideration arises from the successful adoption of this scheme; the present system of thrashing out the wheat crop would no longer be applicable, the process of thrashing would be applied to the ears alone, the straw would no longer pass through the thrashing machine, and consequently a much smaller machine would be required, and much less power to work it. Inasmuch as power and labour are the equivalents of expense, so the discontinuance of powerful machinery and labour implies an important economy in this respect. There would be saved a costly machine, and a costly power of steam or horses, that of water being more rare. The manual labour would be much less, from the less bulky nature of the material to be dealt with; a very light machine would separate the grain from the husk and clear it of the chaff. Here, therefore, would be an important saving to set against the assumed extra expense of 3s. 2d. per qr., or 5d. per bush.

The result or object to be gained seems to be, to place the wheat crop, after it has ripened, in circumstances of certainty and security, independent of all weather, and to secure its quality and sample at the highest standard to which the season may have matured it. There would be no waiting for dry weather to commence the cutting down of the crop—it would be a matter of indifference whether it rained or not during harvest, except as regarded the comfort of persons employed; a new class of labourers would be introduced into the operations of harvest, it would no longer be necessary to have the most able-bodied at high wages, the labour would be comparatively light, and could be performed by the weaker and more numerous, without fatigue and at moderate wages, although, no doubt, the principle of contract would be introduced with advantage, and good wages might and ought to be earned, and vigour and despatch secured.

It is to be observed that the process of drying by currents of pure and dry and heated air can have no injurious effect on the taste and delicacy of the flour. It is not a process similar to drying in a kiln by which the taste of grain is affected—the processes are totally dissimilar, except that both produce dryness.

In conclusion, I may remark that the agricultural world is at present in pursuit of the important object of reaping by a machine as a substitute for the sickle and the scythe, and it seems nearly to be attained. When that object is fully attained, it would only harmonise with the end and object of the present statement. The separation of the ears of wheat from the straw would be readily effected as the crop was laid on the ground by the action of the reaping-machine: its position would give every facility for the operation. The substitution of machinery for manual labour would liberate a greater number of persons for the various parts of a new system of harvest operations. The complete success of the reaping-machine would only facilitate the success of the drying system, which I am desirous to bring under consideration.

A LANDLORD.

THE TRADE OF DENMARK.

(ELSINORE.)

OFFICIAL REPORT UPON THE TRADE OF DENMARK, BY MR. LARLHAM, HER MAJESTY'S ACTING CONSUL AT ELSINORE.

The total value of the imports is rix dollars 56,871,711, or £6,560,953, being an increase on the year preceding of rix dollars 6,510,999, or £751,269. The total value of the exports is rix dollars 39,088,108 or £4,510,172, being an increase of rix dollars 4,819,308, or £556,074 on the year preceding.

The value of the imports in the year 1853, amounted to rix dollars 16,081,912, more than that of the exports, and this excess in favour of the imports, had, according to the tables, increased in the year 1854 to rix dollars 17,773,603, or £2,050,800, although the proportionate increase on the exports in this latter year is far greater than that on the imports, and which incongruity is to be explained by the fact that the value of the articles imported is calculated at their actual cost, and includes freight, insurance, and like charges; whereas the value put upon the articles exported is that previous to shipment; and it is further important to remark that the official value at which these latter articles are calculated, is a fixed one throughout the year, and as, during the year in question, all articles of agricultural produce, the staple exports of Denmark, rose considerably in price, the actual difference between the imports and exports will be much reduced, 'and this will be more clearly explained by the following quotation of the official value, and the prices in the year 1854.

	OFFICIAL VALUE.	AVERAGE PRICES.	
	Per barrel.	Per barrel.	
	R.ds.	R.ds.	R.ds.
Wheat	7	12	18
Rye	4	8	51
Barley	3	6	6
Oats	3	4	8
Peas	6	8	63
Rapeseed	8	12	34
Butter	50	72	11

And as in the above year there were exported of wheat, 844,797; rye, 475,517; barley, 1,373,033; oats, 729,741; peas, 231,981; rapeseed, 263,466; and of butter, 81,406 barrels, the actual value of the exports would, at these average prices, be increased with rix dollars, 14,800,259, or £1,707,722, on these articles, and would bring the value of the exports near upon a par with that of the imports.

These prices are, however, an exception, but will be found to act upon the value of the exports in a still greater degree in the year 1855, the market prices during that year having ruled still higher.

The following abstract showing the increase in quantity on the import and export in the year 1854, of the most important articles, may be found of interest.

IMPORTS.

	Tons.		Per cent.
On cotton goods	431	or	50
„ Cotton yarn	639	„	49
„ Linen goods	185	„	20
„ Linen yarn..................	75	„	42
„ Silk and silken goods	15	„	40
„ Woollen goods	284	„	64
„ Woollen yarn..............	45	„	94
„ Wool	235	„	44
„ Coffee....................	1,200	„	17
„ Rice......................	944	„	32

EXPORTS.

	Qrs.		Per cwt.
On grain	240,000	or	15
„ Rapeseed..............	69,300	„	125
„ Beans	5,840	„	20
	Tons.		
„ Butter................	750	„	9
„ Bones	1,000	„	33
„ Skins and hides	350	„	18
„ Meat	325	„	28
„ Rags and paper stuff....	350	„	42
„ Bricks	2,500,000	„	75
„ Oil ....Tons.	465	„	60
„ Wool	118	„	8

The greatest proportionate quantity of the following articles went to Great Britain, viz., of wheat 283,000; barley, 343,700; oats, 246,240; peas and tares, 67,000; and rape seed, 37,000 quarters; and of cattle, 21,312 head; but this is only the direct export to that country, and there is little doubt that a large proportion of the produce of Denmark, and of cattle which go to Altona and Hamburg, finds its way to Great Britain.

The value of the import articles entered for home consumption in 1854, was rix dollars 55,009,813, £6,347,270, or 96¾ per cent. of the total imports, and on which was paid a total amount of import duty of rix dollars 6,175,897, or £712,603.

In comparison with the preceding year, Great Britain figures with an increase of rix dollars 3,328,323, or £384,000 on the imports, and rix dollars 1,531,836, or £176,750 on the exports, showing a balance in favour of Great Britain of £207,250, and confirming the opinions which have been expressed for some years past that the import of manufacturing and other articles direct from Great Britain is gradually increasing, and that, consequently, the dealers in this country find a greater advantage in this direct trade, than by purchasing in Hamburg even at long credits.

I must state farther, as a fact which, in connection with the war with Russia, will be of interest to her Majesty's Government, that the trade between Denmark and that country, which in the year 1853 amounted to a combined value of rix dollars 3,877,859, or £447,445, was reduced in the year 1854 to rix dollars 404,228, or £46,642. At the same time, the value of the imports from Prussia had increased in the same year, rix dollars 798,241, or £92,105, from which it may be inferred that some Russian produce found its way to Denmark by transit through the ports of Prussia; nevertheless, allowing the whole of this increase in the imports from Prussia to fall upon Russian produce, the value of the imports from Russia in 1853 being rix dollars 3,565,009, or £411,360, there would still be a loss in trade on the side of Russia of £319,225, or 78 per cent.

The imports from Sweden had increased in value rix dollars 740,000, or £85,384, such increase being principally in the articles of timber and deals, and owing likewise to the blockade of the Russian harbours, from whence hitherto the largest quantity of these articles had been received.

There entered of British and foreign ships in the year 1854, 71,664 vessels, discharging cargoes to the amount of 1,075,425½ tons, and that there cleared out 71,508 vessels, with cargoes amounting to 760,428½ tons. The burthen per register of the whole shipping cannot be given, the tonnage of the steam-shipping not being stated in the tables, and vessels discharging only part cargoes never being measured, the lastage money and other dues being only chargeable on the measurement of the goods discharged; neither is it possible to form any idea of an average tonnage for these vessels, those under both denominations being of such variable burthens, the steam shipping in particular ranging between the small class of steamers engaged in the coasting trade, up to the steam transport employed that year in her Britannic Majesty's service, and her Majesty's ships of war, several of which took coals, cattle, and provision on board at this port, and Copenhagen, and are doubtless included amongst the steam shipping, or shipping taking part cargoes on board.

In the year 1854, as compared with the previous year, an increase took place of 7,098 vessels bearing cargoes of the burthen of 89,433 tons, and in this increase are included 450 Danish steamers bearing cargoes, to amount of 8,994 tons, and 174 foreign steamers bearing cargoes to amount of 1,202 tons, the increase on cargoes by Danish steam vessels being 17 per cent., and that on foreign steamers only 2¾ per cent.

By this it will be seen that the employment of steam shipping belonging to this country has extended materially, the larger number being engaged in the coasting trade.

A return of the shipping of all nations employed in the year 1854 in the coasting trade of Denmark, shows that 46,482 vessels entered, of the united tonnage per register of 831,771 tons, and that 45,976 vessels cleared, of 824,657 tons register, the proportion being 97⅔ per cent. of Danish, and only 2⅓ per cent. of foreign shipping, on the register tonnage, the proportion of the latter being still smaller on the tonnage of the cargoes, or little above ½ per cent., and the principal part of the foreign vessels have doubtless entered from foreign ports, and the clearances coastwise have been so called "shifting ports" to load cargoes for foreign countries.

The total number of vessels registered in Denmark, and in the Duchies of Sleswig and Holstein in the year 1854 was 5,179 ships, of the united tonnage of 210,345 tons, this amount being an increase on the previous year of 30 ships of 18,564 tons, or about 8,718 per cent. on the tonnage.

EXPERIMENTS IN CORN-GROWING IN 1856.

Dear Sir,—Agreeably to promise we hand you a tabular statement of the produce of our twenty experiments in 1856 on our various fields, for public inspection and criticism. All we can say is, that our land was shockingly foul, and worn out by over-cropping. We have done our best, and are satisfied ourselves, considering the bad season for wheat: and will certainly not sow more than one bushel per acre next year, under any circumstances. We have made up our minds to sacrifice no more land purposely for potatoes; but to plant them with our wheat. All is faithfully stated; and your earliest insertion of it will oblige,

Maldon, Essex, Oct. 4.

Yours most truly, A. Hardy and Son.

A Tabular Statement of the Results of Hardy and Son's Twenty Experiments of Growing Corn, on their Two Farms, Maldon, Essex, 1856; the Produce showing their Loss or Gain.

LIMBOURNE BROOK FARM.

No. of Field.	No. of Acres.	Variety.	Seeding per Acre.	Produce per Acre.			Weight per Bushel.	State of the Land.	How Planted.	How Cleaned and Cultivated.	Cost per acre.	Weight of Straw.	When sown.	Last Crop.	Manure.	Ex-periment.
				Q.	B.	P.	LBS.				s.					No.
1	4½	True Egyptian white Mummy.	½ bushel	5	5	0	66	poor, and foul mixed soil.	Drilled at 5 rows on stetch of 7ft. 4in.	scarified 2, hoed 2, and weeded.	20	very heavy and useful.	Nov. (too late)	various Seeds.	slightly dunged.	1
2	10	Rough chaffed white..	1 bushel	5	0	0	64	poor, and foul heavy clay.	Drilled 5 rows on 7ft. 4in. stetches.	scarified 2, hoed 2, and weeded.	20	heavy	Nov. (too late)	Clover	burnt earth and dung.	2
		A certain portion of one stetch.	¾ thinned by hand	0	0	2½	best and heaviest.	—	—	—	—	heaviest	—	—	—	3
		Same portion of adjoining stetch.	not thinned out	0	0	2	64	—	—	—	—	heavy	—	—	—	4
3	2	Rough chaffed	2 bushels	3	4	0	64	poor, and clean mixed soil.	Broadcasted	hand-hoed and weeded.	6	light	Dec. (too late)	Peas and Seeds.	dunged well.	5
		A certain portion of one stetch.	1½ pecks	—			—	—	—	—	8	50lbs.	—	—	—	6
		Same portion of adjoining stetch ¾ thinned out	1¾ pecks	heaviest			—	—	—	—	8	43lbs.	—	—	—	7
		One stetch	1 bushel	5	0	0	64	—	—	—	8	heavy	—	—	—	8
4	8	Tartarian Oats	2 bushels	unthrashed, estim. 6 qrs.			fine	poor and foul	Broadcasted	Charlock we'd'd by women.	12	heavy	March (too late)	var. Seeds and Wheat	dunged slightly.	9
		One stetch	¾ th. out	8	0	0	heaviest	—	—	—	—	heaviest	—	—	—	10
		Adjoining stetch	1 bushel	7	0	0	heavy	—	—	—	—	heavy	—	—	—	11
		Next stetch	3 bushels	5	0	0	light	—	—	—	—	light	—	—	—	12

KNOWLES' FARM.

1	8	Prolific red Wheat ..	½ bushel	4 6 0	60	good, but very foul.	Drilled 5 rows on each stetch.	scarified, hoed, and weeded.	20	heavy	October	Peas	½ dunged—the other ½ best sample.	13
2	2	Prolific red..........	1 peck	4 0 0	60	good, but very foul.	Drilled 2 rows on each side of the stetches.	scarified and hoed.	20	heavy	October	Beans	60 bushels of soot on the 2 acres.	14
	—	Early Potatoes	6 bushels	0 100 0	56	good, but very foul.	Drilled on the middle.	3 ft. space out of 4 forked.	20	dwarfy and light.	March, 1 centr. ro'.	Beans		15
	1	Prolific red..........	½ bushel	4 0 0	60	good, but foul	Drilled 4 rows on a stetch.	forked and scarified.	25	heavy	October	Beans	—	16
	1	Prolific red..........	½ bushel	Corn 3 qrs. & Lucerne, good plants.	56	good, but foul	Drilled 4 rows on a stetch, and broadcast with Lucerne.	weeded by hand and hoed.	30	light and blighted.	October, Lucerne in March.	Beans	—	17
	½	Prolific red..........	Transpl. 1 ft. apart at ½ peck	4 0 0 very fine.	60	good, but very foul.	Drilled 4 rows on a stetch.	scarified, hoed, and forked.	40	very heavy	August, transpl. in Oct.	Beans	—	18
	½	Prolific red..........	½ bushel	1 0 0	50	good, but foul	Drilled 4 rows on a stetch.	hoed	10	failure, seed destroyed.	March, ¾ destroy'd by rooks.	Beans	—	19
	⅛	Peruvian Barley	1 pint	6 0 0	60	good, but foul	Drilled 4 rows on st.	hoed	5	heavy	March	Beans	—	20

WHARFEDALE AGRICULTURAL SOCIETY.—AWARD OF TURNIP PRIZES.

The annual premiums offered by this society, of silver medals to gentlemen and of £3 and £2 to farmers, for the best and second-best crops of swede turnips, were awarded on Wednesday last. There were ten entries in both classes. The judges were Mr. Thomas Horner, East Morton, near Bingley, and Mr. Henry Tennant Peacock, Haddockstones, near Ripley, and the following is the result of their decisions:—Gentlemen's class: 1st, Thomas Horsfall, Esq., Burley Hall; 2nd, W. R. C. Stansfield, Esq., Esholt Hall. Highly commended: Edward Akroyd, Esq., Denton Park. Farmers' class: 1st, Mr. Abram Wade, Arthington; 2nd, Mr. Albaney Renton, Leathley. Highly commended, Mr. John Renton, Leathley. The crops of turnips, in both classes, were all commended for cleanliness. The judges gave it as their opinion, that although potatoes had been grown on every alternate ridge in Mr. Horsfall's field, that gentleman had still, from the increased size of his turnips, a greater weight of turnips on the whole acreage than any other of the competitors in the Gentlemen's class. In the evening the judges, a portion of the committee, and the secretary, sat down to a substantial tea at the White Horse Hotel, Otley. An interesting discussion on agricultural topics ensued, in the course of which Mr. Horsfall gave it as his opinion, that the cultivation of turnips and potatoes on alternate ridges was advantageous to both crops, inasmuch as the foliage of the potato attained its full growth long before that of the turnip, and, on the latter having expanded its leaves to the full, those of the potato had considerably dwindled: the effect was to afford to each crop the advantage of freer access to the influence of the atmosphere when most required. The produce of his potatoes up to the time of the wet weather had been 10 tons 64 lbs. per acre, reckoning *only* the ground occupied by potatoes. The potatoes taken up since the wet season had been partially affected with rot, and on this account had not yielded equally well. For many years he (Mr. H.) had applied his manure (the liquid and solid excrement of his cattle, which is without admixture of straw,) quite fresh, and without previous fermentation: he preferred doing this on his strong land in autumn; but, in case of his applying it in spring near to seed time, he had found it advantageous to strew guano amongst the fresh excrement at the rate of two to two-and-a-half cwt. per acre. The effect of decayed matter being placed in contact with sound, affecting the latter, was well known. In order more completely to satisfy himself of this, he (Mr. H.) had filled two large garden pots with fresh excrement—in the one of which he mixed a small quantity of guano. The effect was soon perceptible, by a change of colour, and by the appearance of gaseous bubbles on the surface, accompanied by a strong smell; whilst the pot of excrement, without admixture of guano, did not exhibit the same appearances. The advantage of accelerating the decomposition of manure for turnips would be acknowledged. The experiment was tried twice in his vinery, at a temperature of about 60 deg. The larger sized swedes of Mr. Horsfall's crop measured in girth 2 ft. 4 in. to 2 ft. 6 in.

LICE ON CALVES.—Give the calf a tablespoonful of sulphur three successive mornings. If this is not effectual repeat the operation after a few days. One course is commonly enough.—*American Paper.*

LAUNCESTON AGRICULTURAL SOCIETY.

THE ANNUAL SHOW AND DINNER.

The annual cattle show of the above society (the members of which comprise a large number of the leading agriculturists of Cornwall, and the adjoining county of Devon) took place on Tuesday, the 11th Nov., in a field in the immediate vicinity of Launceston, and embraced 305 cattle entries. The society has not had a very long career, and it appears now to have entered on a new era, and to be destined to attain a position of greatly increased importance. It was formed a very few years ago, and at first confined itself to the offering of premiums for fat stock. In the third year prizes were added for agricultural labourers, farm servants, and green crops. This year the aggregate amount of the premiums was doubled (as compared with those of last year), £60 being the total sum offered to the competitors; and the show was in all respects such as to justify this liberal advance on the part of the committee. The following is the list of

PRIZES.

AGRICULTURAL LABOURERS.

1st prize, £1, to William Short, working on Dutson Farm 49 years.

2nd, John Knight, on Braundsworthy Farm 46 years.

3rd, Caleb Pearse, on Trerilhick Farm 44 years.

4th, Thomas Down, on Cawdor Farm 38 years.

5th, John Fennimore, Egloskerry Parish, 30 years.

6th, John Heard, on Treguddick Farm 30 years.

FARM SERVANTS.

1st prize to Richard Martin, with Mr. James Lane, Trethevy, 34 years.

2nd, William Mason, with Mr. Sleman, Tunney Bridge, Kerle Parish, 33 years.

3rd, Isaac Hatch, with Mr. John Wise, Tregeda, 14 years.

CATTLE.

Fat Oxen.—1st prize to Mr. G. Lobb; 2nd, Mr. T. Nicholls, sen.; 3rd, Mr. J. Wills.

Fat Cows.—1st prize to Mr. Henry Essery; 2nd, Mr. G. Lobb; 3rd, Mr. John Bartlett.

SHEEP.

Fat Wethers.—1st prize to the Rev. H. A. Simcoe; 2nd, Mr. Thomas Palmer; 3rd, Mr. J. Nicholls, jun.

Fat Ewes.—1st prize to Mr. Thomas Palmer; 2nd, Mr. Amos Rundle; 3rd, Mr. Thomas Kittow.

BREEDING STOCK.

Entire Horses.—1st prize to Mr. Robert Rowland, Blagdon; 2nd, no competition.

Mares.—1st prize to Mr. H. Essery; 2nd, J. Wills.

Bulls.—1st prize to Mr. G. Lobb; 2nd, Mr. J. Jackman. The Duke of Northumberland's shorthorned bull was highly commended.

Bulls (under 2 years old).—1st prize to Mr. John Bartlett; 2nd, Mr. James Somers.

Cows.—1st prize to Mr. Thomas Palmer.

Heifers (under 3 years old).—1st prize to Mr. G. Lobb; 2nd, Mr. J. Somers.

Heifers (under 2 years old).—1st prize to Mr. G. Lobb; 2nd, Mr. Thomas Palmer.

Rams.—1st prize to Mr. T. B. Parsons; 2nd, Mr. Daniel Bayly.

Hog Rams.—1st prize to Mr. J. B. Parsons; 2nd, no competition.

Ewes (under 2 years old).—1st prize to the Rev. H. A. Simcoe; 2nd, Mr. J. B. Parsons. Mr. Amos Rundle's ewes highly commended.

Hog Ewes.—1st prize to Mr. Brent; 2nd, Mr. Thomas Palmer.

Boars.—1st prize to the Rev. H. A. Simcoe; 2nd, Mr. John Bartlett. The boars of the Rev. E. C. Phillpotts, C. Gurney, Esq., and Mrs. Horswill, were highly commended.

Sows.—1st prize to Mr. John Bartlett; 2nd, Mr. William Uglow. Several other animals in this class were highly commended.

HORSES.

Special prize by J. T. Lawrence, Esq., for the best 3 year-old Colt for saddle purposes, to Mr. John Nicholls, jun.

POULTRY.

Fowls.—1st prize to James Martin, of Launceston; 2nd, John Jackman.

Ducks.—1st prize to Mr. John Jackman; 2nd, Mr. Richard Gubbin.

GREEN CROPS.

1st prize to Mr. Thomas Palmer; 2nd, Mr. J. B. Parsons; 3rd, Mr. William Essery.

FARMS.

Special prizes given by the Rev. H. A. Simcoe, for the tenant-farmer whose cultivation and general management shall be most approved by the judges.—100 acres and upwards, a silver cup (value 5 gs.), to Mr. John Wills, South Petherwin; 50 acres and upwards, £3, to Mr. R. F. Trist, St. Thomas.

A second prize (30s.) for farms of 100 acres and upwards, given by G. Vincent, Esq., and H. Badcock, Esq., was awarded to Mr. William Essery, South Petherwin.

THE DINNER.

In the afternoon the members of the society dined together at the Central Subscription Rooms, adjacent to the White Hart Hotel, under the presidency of C. Gurney, Esq., of Trebursye. About 150 gentlemen sat down; and at the lower end of the room several labourers, who had taken part in the day's proceedings, some of them being competitors for prizes, shared in the entertainment provided.

The first toast was, of course, that of "The Queen," which was most loyally responded to.

In proposing "Prince Albert, the Duke of Cornwall (the Prince of Wales), and the rest of the Royal Family," the Chairman alluded to the fact that Prince Albert was a frequent and successful exhibitor at cattle shows, and expressed a hope that the Duke of Cornwall—their own Duke (cheers)—would in that respect, as in others, tread in the footsteps of his father (cheers).

The next toast was "The Army and Navy," which was acknowledged by the Rev. S. C. Clarke, as having relatives and connexions in both services.

Mr. G. M. Gifford, one of the secretaries, then read the awards of the judges (given above).

The Chairman then proceeded to present to Mr. John Wills, of South Petherwin, the silver cup, value five guineas, given by the Rev. H. A. Simcoe as a special prize for the most approved cultivation and general management of a farm of 100 acres or upwards. Addressing Mr. Wills by name, he said he was very glad to be able to present to him this lasting testimony to his ability and skill as a farmer in that district. He had been acquainted with him many years, and knew that he stood very high in the estimation of the farmers of the neighbourhood, and on that occasion it must be extremely gratifying to him to have obtained the approval of umpires who are so capable of judging of the comparative merits of farm management.

The presentation of the prize, which was very tastefully executed, and engraved with a record of its origin, was accompanied with the cheers of all assembled.

The prizes were then presented to the agricultural labourers and farm servants, who were collectively addressed in an appropriate and feeling manner by the Rev. H. T. May, on behalf of the Society.

At the termination of this interesting portion of the proceedings

The CHAIRMAN proposed "The Clergy," a large proportion of whom, he remarked, were themselves practical cultivators of the soil, and connected by close social intercourse with the farmers of their several localities (cheers).

The Rev. E. PHILLPOTTS, of Lezant, returned thanks for his clerical brethren and himself. The Chairman had, he observed, adverted to the fact that many of the clergy were practical agriculturists. For himself, he could sincerely declare that he was delighted at witnessing the show of that day. He there saw the raw material of the dinner-table in a high state of development; and the more he examined into the matter, the more convinced was he that great progress was being made in the agriculture of that county (cheers). If Cornishmen had not been men of enterprise and spirit, they could never have been such successful miners and engineers; and why should they not exhibit similar qualities as agriculturists? Why should not some of those present, for example, get up a joint-stock steam-thrashing machine?" (Hear, hear).

The CHAIRMAN next proposed "The successful candidates," remarking on the impetus which the entries had given to the society's operations, and associating with the toast the name of Mr. Wills (cheers).

Mr. WILLS said it was with no ordinary degree of pleasure that he rose to respond to the toast. The cultivation of the land was now better understood in that county than it was some years ago, and agricultural progress had, he believed, been recently making great strides. Still, notwithstanding all that had been done, it must be acknowledged that much remained to be done (Hear, hear). With regard to his own farm, he could assure them that he had pursued the same system during the last twelve months that he had done for a quarter of a century; he had not deviated from it one iota. He was extremely gratified to find himself in the position which he occupied that day, more particularly as he knew his competitors to be able and intelligent men; and he was convinced that it would have been vain for him to attempt to compete with such men if he had not had confidence in his farm. As regarded the general improvement of the land, he felt that it must continue. Any gentleman who was at all aware of the consumption of this country must see the necessity of progress in agriculture. But he wanted to know how the farmer was to cultivate his land on an extensive scale of improvement, involving the outlay of considerable additional capital, without having some security that he would be able to obtain a fair return (Hear, hear). That was a point which must sooner or later be considered by the landed proprietors generally (Hear, hear). At present the community was dependent on the foreigner for our immense quantity of bread, which he believed could be produced at home if there were a fair honest agreement between the land-owners and the land-occupiers, and that was a point which must ere long come home to the heart of every man who consumed bread. He (Mr. Wills) had always had an interest in the soil; but in those years of depression which they all remembered, no one knew the truth of what he was about to say better than did their excellent chairman, as the steward of very large estates in that county. At that period, he said, not one-third of the rent was paid out of the produce of the farm (Hear, hear). Many of them he knew went back seriously at that time; and though he himself continued to cultivate the same land, and to employ the same amount of labour as before, it was with the conviction that unless the price of agricultural produce improved, the landed interest of the country must be sacrificed. While he congratulated the company on the fact that agricultural prices had improved, he must declare that he did not like high prices. What he wanted was to be remunerated for his trouble and expenditure; and he was quite sure that in the long run high prices would do no one any good, and that fair remunerating prices would prove far better both for the grower and the consumer. He trusted that as Englishmen mingled together more they would understand each other better. Certain he was, that what was for the benefit of the tenant was also for that of the landlord, and that the interest of both was bound up with that of the whole community (cheers.)

The CHAIRMAN then proposed "The Unsuccessful Candidates," for whom the Rev. E. Phillpotts returned thanks; and afterwards, "The Umpires," (Messrs. Burrows, Cleverton, and Perry).

Mr. BURROWS, in replying, dwelt on the difficulty of the task which he and his colleagues had had to perform as regarded the competition in farms; in proof of which he remarked that the merits in the case of the first prize were put down as 17 to 16, and in that of the second as 13 to 12—a state of things, he added, which was highly creditable to the unsuccessful competitors in that department.

Mr. CLEVERTON, in speaking of his survey of the green crops, which extended over thirteen farms, observed that he had found the weight of swedes per acre quite an average, while the crop of turnips throughout the district was generally bad. The umpires had observed a very bad custom prevailing in the West of England with respect to turnips, namely, that of saving the seed of the common turnip indiscriminately, it being sometimes placed in a corner of a field, instead of making a selection of seed and placing it in a suitable position. Speaking generally, he believed that the cultivators of green crops in that district were making great strides in the path of improvement, and were equal, if not superior, to the men of the South ; and he rejoiced to think that Cornwall, which was sometimes said to be almost out of England, was approaching nearer and nearer to the best parts of England in the race towards perfection (cheers). They were the best growers of turnips in the West of England.

The CHAIRMAN : In England (cheers).

Mr. W. PERRY, another of the umpires, said he would assert that the best mutton and the best beef in the country were produced in the West of England—a fact which, in his opinion, evinced good management. It might be said by some, "Well, you have good land, and your rents are low." As to the latter point, he affirmed that the rents in that neighbourhood were the highest in England (Hear, hear). He admitted that they had good landlords, good soil, and good buildings ; but they paid a good price for their farms.

The CHAIRMAN then proposed "Success to the Society." He said when he looked around him and saw the numerous and respectable body of gentlemen who were assembled on that occasion, and when he remembered their energy and steadiness in the pursuit of agricultural improvement, and their eagerness to obtain the best information on all subjects connected with agriculture, he could not entertain the smallest doubt that the society would be distinguished by increased prosperity. Formerly he declined to attend the annual meeting because he did not consider the plan of the society sufficiently extensive, confining itself, as it did, to the offering of premiums for fat bullocks ; but this objection had now been removed, and he felt very great pride in taking part in the proceedings. Of the Exhibition of that day, he would remark that everyone present must have felt that the show of North Devons was beautiful. To this he must add that he was also exceedingly struck with the Herefords and the sheep, and he thought no man who remembered that it was the first exhibition of such animals could do otherwise than acknowledge that it was a most creditable display. He would ask of what good were these societies ? He would answer—first, that it brought men together, all interested in one pursuit, when they discussed amongst themselves the various opinions on agriculture. That alone was most useful ; but in his opinion the great use of these societies was exhibiting in one spot, and at one view, the best of the various breeds in the district, and thus accustom the eye to distinguish the best from the second-best, and one breed of cattle from another. If there were only one such society, and that at a distance, only a few of the farmers could go and see it, and those remaining home, which would be the great bulk of the district, would have no opportunity of seeing the various breeds or the best qualities, and would perhaps remain under the delusion that there were none superior to their own. These local societies coming into their immediate neighbourhood affords them this opportunity, which otherwise they would not get (Hear, hear). They were all aware that he had been a good deal mixed up personally with the agriculture of that district, and was therefore acquainted with most of its peculiarities. Last year he went into Lincolnshire and Sussex, for the purpose of representing the owners of some estates there ; during his stay he had business to transact with tenants who cultivated farms varying in extent from 300 to 5,000 acres ; and the result of his observations was this, that, although they (the agriculturists present) were most thoroughly beaten in the counties which he had named, as regarded the production of corn, yet with respect to cattle and green crops and grass their own superiority was equally marked (cheers). He went over some of the principal farms in Lincolnshire and Sussex, and he would now affirm that there were no cattle, no turnips, and no grasses equal to those which he had seen in their own county. Indeed, the capabilities of the land in that neighbourhood for the feeding of cattle and the growth of green crops were far superior, as a general rule, to those of any land which he had met with elsewhere. Owing to the nature of the soil, and the moisture of the climate—a moisture which was attributable to the contiguity of the two seas—it was a great point for the agriculturists of the West of England to direct especial attention to the improvement of cattle and the food of cattle. The farmers of the eastern counties of England could with comparative ease produce five or six quarters of corn per acre, while the Cornish farmers produced only three or four. Mr. Cleverton had told them that the rents of that district were high as compared with those of other districts. He (the Chairman) would acknowledge that, as compared with those of other districts in England, the rents were not low (laughter) ; further than that he could not go. Mr. Cleverton had told them that in this district there were very good farmers—superior to those in other districts. In this he (the Chairman) concurred ; but what inference can be drawn from that in connexion with high rents—why, that high rents make good farmers (laughter). Seriously speaking, he must say that when men succeeded as farmers, success was generally due to their own energy, their own skill, or their own efforts to acquire knowledge (Hear, hear). After dwelling at some length upon the leading features of the district with which the Society was connected, and describing them as peculiarly favourable to the spread of agricultural improvement, he concluded by remarking that there was no reason why the Launceston Agricultural Society should not become the first society of the kind in the West of England.

The toast was most cordially responded to.

Mr. RADDALL proposed, in highly eulogistic terms, "The health of the Duke of Northumberland," as a great landed proprietor in the Launceston district, and observed that the reason why he took upon himself the task was, that he happened to have had the pleasure of attending the agricultural meeting held at Alnwick in the last year, at which the Duke himself presided.

After a hearty response from the company, the toast was acknowledged by the Chairman on behalf of his Grace.

The next toast was "The health of the Rev. H. A. Simcoe, as the donor of the silver cup," which, in the absence of the rev. gentleman himself, was acknowledged by his son-in-law, Mr. Vowler.

The remaining toasts were, "The Chairman" and "The Secretaries."

The proceedings then terminated.

THE LONDON, OR CENTRAL FARMERS' CLUB.

THE MORAL AND SOCIAL CONDITION OF THE AGRICULTURAL LABOURER, AND THE BEST MEANS FOR IMPROVING IT.

The first monthly meeting of the club after the autumnal recess took place on Monday evening, Nov. 3, at the Club House, Blackfriars; Mr. J. Wood, of Ockley, Sussex, in the chair. The subject for discussion, introduced by Mr. W. Spearing, of Chilbolton, Stockbridge, was "The moral and social condition of the agricultural labourer, and the best means for improving it."

The CHAIRMAN, in opening the proceedings, expressed his gratification at again meeting the members, and his confidence that the interesting question on the card would elicit an animated and useful discussion.

Mr. SPEARING then said:—Mr. Chairman and gentlemen,—I can assure you I rise with a great deal of diffidence to bring before you the subject which is placed on the card for discussion this evening, not merely from a knowledge of my own inability to do justice to it, but because I am fully aware that in this room there must be many more capable, from ability and experience, of introducing it to your notice; but, feeling as I do a deep interest in everything which concerns the welfare of a large and important class, and believing that their prosperity is intimately connected with our own, I determined to place this subject among the number of those from which your committee would have to select for this year's discussion. Before I proceed briefly to call your attention to the moral and social condition of the agricultural labourer, I would state that it is not my intention to enter into the question of wages, because it would involve a wider field than I should be desirous of entering, and also because I believe wages are in a great measure regulated by supply and demand. I would only therefore remark on the subject, that I do not think that that is often the cheapest labour which is paid for by the lowest money payment; and that it is a very great mistake to cut down to the lowest possible standard the wages of the labourer. I believe there is hardly any one to be found who will assert that the moral and social condition of the agricultural labourer is what it ought to be. Time, no doubt, has wrought vast improvements in these respects; but the spirit and requirements of the age demand that we should advance still further. We cannot but admire the way in which many labourers bear the troubles which fall to their lot, and their contented manner even in the midst of numerous privations. In the first place, look at their want of education or even common instruction. By the Census Returns of 1851 it appears that of the boys in England and Wales, of all classes, between the ages of ten and fifteen years, only 36 per cent. are at school. The following are the numbers:—

Boys between 10 and 15 years of age—

At school	348,438
At work	356,872
Neither at school nor work	258,685
Total	963,995

These numbers include all classes, and consequently the proportion of labourers' boys who are not at school is considerably more. The Inspector of Schools in the eastern counties states that "in schools which he inspected, in which there were 2,606 boys, only 232 were above twelve years of age; and only 48 of that number the sons of labourers." A clergyman who wrote to one of the inspectors from Maidstone says—"Comparing the present time with a period several years back, he thinks there are fewer men in his parish that can now read and write, than there were at that time." Sir John Pakington stated last session in the House of Commons, that "he had heard that there was not a single rural parish in Wiltshire where the education was satisfactory." And the Reverend Mr. Clay, the Chaplain of Preston Gaol, states that "upwards of 70 per cent. came into that gaol in such a state of moral debasement that it was in vain to give them instruction to endeavour to teach them their duty, because their state of ignorance was such that they could not understand the meaning of words used for that purpose." The Chaplain of Winchester Gaol, the Rev. Foster Rogers, in his report to the magistrates on the condition of the prisoners from Michaelmas 1855 to Michaelmas 1856, states that the total number of boys received during the twelve months, of seventeen years of age and under, was 190. Of these

50 could read and write imperfectly;
67 could read imperfectly; and
73 were totally ignorant of the alphabet.

The Chaplains of Middlesex, in their annual report at Michaelmas 1854, show nearly the same state of things. They remark that "the number of boys admitted during the twelve months was 1,970; of whom they lamented to say the appalling number of 1,033 (considerably more than one-half) were entirely ignorant of the first rudiments of learning, and totally unable to read or write in the slightest degree; and out of the whole number only 20 were able to read and write to any effectual purpose." All the inspectors of schools agree in stating that there is a want of proper education; but I would turn from inspectors of schools to the Chairman of this Club. In answer to a letter which I wrote to him on this subject, Mr. Wood stated "That he was not prepared to give an opinion on the general state of the labourers in Sussex; but," he added, "judging from my own men, as to education, I should say about half of them can read and write. As to morality, all my regular men, with wives and families, conduct themselves, with few exceptions, very respectably; but single men (those who do not occupy my cottages) are generally a loose and drunken set." From my own experience I believe this to be a correct description of this class. From a want of better education, many labourers are ignorant of the most common things: they are often led into errors, which, if they had even a moderate amount of instruction, they would have avoided, and are often made the dupes of others who wish to lead them to commit crime. Take the uneducated man (the man, I mean, who is even ignorant of the alphabet, and there are many such) as a labourer: he may often be a steady man, he may even be what some would call a good servant; but if you try to raise him, and place him in a more responsible situation, you will, as master, find that he lacks that quickness, in most cases, which a man of even a moderate amount of instruction would possess. Take him, again, as the father of a family, and you will find him too often indifferent to the wants and condition of his children. What means of amusement and instruction has he, wherewith to beguile his leisure hours, and improve his children? I know some people may say that he wants but little in these respects; but I think man was formed for higher ends than that of acting as a mere machine for the performance of daily labour. Another cause of the present indifferent moral and social state of the labouring classes is the wretched condition of many of their dwellings. We see cottages in many places with no more than one room upstairs and one downstairs, or at the most two small bed-rooms and a room below. In support of the truth of my statement I would quote from a writer in the Sanitary Report, who thus describes the agricultural labourers' cottages in Bedfordshire; and I have no doubt his description may with truth be applied to those in many other counties besides. This writer says: "If we follow the agricultural labourer into his miserable dwelling, we shall find that it consists of two rooms only. The day-room, in addition to the family, contains the cooking utensils, the washing apparatus, agricultural implements, and dirty clothes: the windows are broken, and stuffed full of rags. In the sleeping apartment, parents and their children, boys and girls, are indiscriminately mixed; and frequently, a lodger is sleeping in the same and only room. Generally, there is no window. The opening in the half-thatched roof admits light, and exposes the family to every vicissitude of weather. The liability of children so situated to contagious maladies frequently plunges the family into the greatest misery. The husband, enjoying but little comfort, resorts to the beer-shop, neglects the cultivation of his garden, and impoverishes his family. The children are brought up without any regard to decency of behaviour, to habits of foresight or self-restraint, and make but indifferent servants." The Chaplain of Winchester Gaol remarks, with regard to juvenile offenders, that "their domiciliary condition has much to do with their criminal character." Mr. Sturge, in his report on the farming of Somerset, states, in relation to the dwelling of the labourer: "One crying evil remains—want of proper sleeping accommodation for the family. Many cottages have only one, few more than two, sleeping-rooms; and this to accommodate a man, his wife, and grown-up sons and daughters. How, under such circumstances, can the rural population be expected to grow up in habits of decency, morality, and virtue? and how can we wonder at the vice and immorality which prevail? In what condition is the labouring man to return to his morning's work, after his night's lodging in such a dwelling as his too often is? It may, indeed, be easy to descant on the privileges he possesses in a land of liberty, and the comforts which he in consequence enjoys; but such remarks truly prove how ignorant many are of the miserable state of the labourers' dwellings. You may tell labourers they should be contented; but how can you expect this from those who have often been reared in the depths of ignorance, and with cottages without anything to make them comfortable? I attribute this evil in a great measure, in many counties, to the present tenure of property. I allude more especially to that belonging to the church, the present divided interest in which tends to act as a bar to improvement. I believe it will generally be admitted that the crowding of families together in small cottages, or in buildings scarcely worthy the name, does a great deal towards encouraging immorality; and, notwithstanding the improvements which have been made of late years in some favoured districts, the state of labourers' cottages still calls for some effective remedy. Tenants, in entering on their occupations, are generally more ready to look to the state of the farm-buildings than to that of the cottages, although they are no doubt, by having good cottages, indirectly benefited. Think of a man with a wife, and sons and daughters fast verging on manhood and womanhood, being huddled together, at the most, in two small rooms! Surely, in a land which boasts so much of its civilization, this state of things may soon be altered. Far be it from me to say that there are not many exceptions; but the state of the cottages in the south and west of England is generally bad; and this evil, combined with the want of education, cannot fail to keep our labouring population in a state of demoralization. And here I would remark that I think many farmers frequently fall into the error of regarding their labourers merely as the instruments for the performance of their labour, forgetting that they value the sympathy and encouragement of their employers; that these cheer them in their daily walk, and help to make them contented with their lot. If there is one thing which more than another tends to degrade the class whose condition we are considering, it is drunkenness, coupled as it usually is with an uncomfortable home, and aided by our present beer-house system. Having no means of employing his leisure hours in his comfortless home, the labouring man seeks perhaps to beguile them in (for him) the too-genial atmosphere of the beer-shop, where, with jovial companions, he is able to enjoy his glass, regardless of his wife and family, who have oftentimes a difficulty in obtaining a bare subsistence. Lord Stanley, in stating his reasons against attempting the total suppression of the liquor-traffic, says: "Because, in the present lamentable condition of the labouring classes as a body, the labourer has, especially in the rural districts, no amusement or recreation whatever, nor any place of social meeting, except the public-house." Surely this state of things calls for some alteration. Still, one cannot but admire the way in which this class generally bear the trials and difficulties with which they have to contend. There is a great deal of truth in the eloquent remarks of the reverend gentleman who proposed the toast of "The labouring classes," at the meeting of the Royal Agricultural Society, at Chelmsford. Speaking of their state, he said: "Paint their condition as we may, their houses are often a scene of much trial, and much and enduring privation; and their conduct shines a luminous meteor, and makes their debtors all mankind." Having said enough, I trust, to prove that the moral and social condition of the agricultural labourer is not what it ought to be, and that it requires general improvement, I shall endeavour to point out how I think this object may be best effected. Although there may be a difference of opinion on this subject, I believe a good sound education, based on religious instruction, to be one of the first, if not the first, means of improving the labourer's morals, and bettering his condition. It is by the instruction he receives when young that his habits and tastes are generally formed; and it enables him to take advantage of the opportunities which are thrown in his way in after-life. I believe the period will soon arrive when we shall no longer hear of the danger of over-educating our labouring population. There cannot be a doubt that, with the improvements that are being made in agricultural implements, with the great amount of steam machinery that is brought into daily use, and also the great amount of science which is brought to bear upon agriculture, our farm labourers will require to be better educated. Endeavour (I would say) to give the children, when young, as much instruction as you can, more especially that which is likely to benefit them in their "station in life." Give them what Lord Ashburton very properly calls "a knowledge of common things," although, as I know is too often the case, just as they are beginning to learn a little, they may be called away, to other occupations; for there are always inducements being held out to labourers to take their children from school, which they cannot very well resist. There is a means by which this evil may be overcome, or at any rate mitigated, viz., the establishment of night schools; and I am convinced that by such institutions a great boon would be offered to the boys and youths of our agricultural labourers, which if properly laid before them, they would not fail to avail themselves of. It is an objection urged by some, that young men of from 12 to 20 years of age, after going through their labours on a winter's day, would not be likely to take advantage of this privilege; but, from my own experience, I can state the contrary. In the parish in which I reside there was during the last winter a night-school, which was always well attended. On two evenings in every week I used to give the boys whom I employed an opportunity of coming to gain what information I could impart to them; and, without any compulsion on my part, I always had from thirteen to fifteen in attendance. I would give labourers also, through the medium of lending-libraries, reading-rooms, and similar institutions, the means of acquiring useful information, being convinced that this would prove one of the best methods of improving their moral and social condition. It would afford them the opportunity of usefully employing their leisure hours; and it would help to keep them from that pest of almost every village—the beer-shop. I know great difficulty must attend the formation of a reading-room in a country parish; and it will require a great deal of support. Lectures delivered now and then would be a very useful auxiliary. Lending-libraries, I am convinced, would in practice be found very beneficial, and useful publications soon be laid hold of by those who were able to read them. During the late war, one could not fail to be struck with the eagerness with which any of the labouring class who could read tried to obtain a newspaper. I have seen several collected together, and one of the number reading aloud; and I believe that no event during the last few years has so much shown the advantage of giving our labouring population a moderate share of education. It must, indeed, have been a gratification to any person, to have received a letter from some absent son: and depend upon it that son's handwriting was not prized the less because it was directed to the inmate of some humble cottage. But it is stated, by some, that education has tended to make the labouring classes worse servants, or, at any rate, that they are no better in consequence. I differ from the conclusions which these parties would draw, because I have frequently noticed that if there is any man who, from misconduct or intemperance, is without employment, he is most frequently one of those who have had no education; and you will, as a natural consequence of that, find it more difficult to convince him of his error. But I would fain hope that this anti-educational feeling is losing ground; and that if it does still prevail, it will not fail ere long to yield to the well-expressed voice of public opinion. We give in our workhouses, in our juvenile reformatories, and in our county prisons, the means by which their inmates may be educated. Now I would ask, as such is the case, can it be with justice argued that it is better that the lower orders should not have a fair amount of education. Labourers are, equally with ourselves, capable of bettering their condition. They have talents committed to their care; let it be our aim to assist in giving them the means of improving them. One means also by which the younger portion of our labouring population might advance their education is by a regular attendance at the Sunday-school; and this is not open to the objection urged by some parties with respect to evening schools or classes, namely, that those who attend are wearied by their labours during the day. I know of no method by which the boys and young men could better employ their time than by a regular attendance at the Sunday-school. This will tend not merely to advance their spiritual interests, but to improve them in their reading: it will keep them from idleness, rendering them at the same time more fit for their week's labours than if they had spent the day in bad society; and not only so, but it will serve to make them better members of society. I believe it is a duty incumbent on employers to press upon the younger portion of their servants the urgent necessity of their laying hold of the opportunities for improvement which are by this means frequently held out to them. If you educate the agricultural labourer in a manner becoming his station, while you will in most instances make him a better member of society, you will not fail to reap, as cultivators of the soil, some of the advantages which naturally flow from such improvement. You will find him generally a better workman, more ready at understanding any orders which you may have to give—more capable of comprehending the improvements which science is daily more and more bringing to bear upon agriculture. On the other hand, if he should fail in these respects, you will at any rate have the satisfaction of knowing that upon him will rest the responsibility. I am willing to admit, that in endeavouring to carry out any plan for assisting in educating the agricultural labourer difficulties will abound, parents being often uninterested, employers frequently opposing, children preferring idleness, prejudices requiring to be overcome, besides a host of minor difficulties. Nevertheless, so convinced am I of the advantages of education that I would appeal to you, as you sympathise with a large and important class—I would appeal to you on the ground of self-interest—I would appeal to you as Englishmen who feel an interest in our common country, to assist by every means in your power in elevating the labouring population from the depths of ignorance, to the vantage-ground which a good sound education will not fail to give them (cheers). I would now turn from education to that which also requires in too many instances great improvement, namely, the state of the dwellings of the labouring class. We cannot be surprised that his home has so few charms for the labouring man, for it is—not to speak of the many other inconveniences and trials which he daily meets with—but little comfort to him after his day's work to come home to what is often nothing but a comfortless hovel. We cannot expect much improvement in the moral condition of the labourer so long as his cottage remains what it now too frequently is—an incentive to everything immoral. In the prize report on the farming of Dorsetshire we see the vast improvement made by Mr. Sturt in the cottages on his property; and this is an example which may be followed with advantage by landed proprietors generally throughout the country. I am aware that there is great difficulty in providing labourers' cottages with proper accommodation. I have heard it stated that they ought on all occasions to have three bed-rooms. Although this would generally be attended with benefit, still there are cases in which two bed-rooms would answer the purpose quite as well. Due care should be taken by those who have the management to place the larger families in the cottages with most rooms. A man with a good cottage will naturally return to his home in the evening, after the labours of the day, much more contented, and better fitted for the labours of the ensuing day. Having stated my belief that good cottages will improve to some extent the moral and social condition of the agricultural labourer, let me add that something should be done towards providing suitable lodgings for young unmarried men. Such persons frequently go to other parishes for work, and many of them are obliged to lodge by night three or four, or more than that, together in some loft or barn, going in the day to eat their food at some neighbouring cottage. Such is very often the case in the South or West of England with our under-carters and shepherds, who sleep over the stable, or in some similar place. In what condition is a man who is thus situated for the performance of his daily labour? With what feelings does he rise in the morning? Surely not often with those of gratitude towards either his heavenly or earthly master. This evil might, I think, be obviated in a great measure by the erection in large parishes of a lodging-house under the superintendence of a well-conducted master; and where parishes are smaller, and contiguous to each other, one such building would answer the purpose for two or three. I see there is an account of a building of this description in the Bath and West of England Society's Journal by Sir Arthur Hallam Elton, on whose property at Clevedon it is erected. This gentleman says he hoped to attract three classes of persons to the lodging-house: first, lads who had left school and taken regularly to farm labour, and who, for decency's sake, should not longer be allowed to share the sleeping-room occupied by their sisters and brothers; secondly, unmarried men of any age, natives of the place; thirdly, tradesmen and labourers, strangers to the place, but engaged to perform work there for either a definite or an indefinite time. A place of this description, as is very justly observed, would be attended with many advantages; and by the promotion of evening classes, lectures, &c., it would tend, directly or indirectly, to benefit the moral and social condition of probably the worst-conducted portion of a labouring population—viz., young unmarried men. A superintendent has the management of the lodging-house at Clevedon. As long as there are ten lodgers, he pays no rent, but receives a penny a week on each lodger; after the number of lodgers falls below ten, he pays a small rent, which increases to ten pounds a year when there are no lodgers at all. This, of course, is an inducement to him to keep the house well filled. The ground-floor rooms are 12 feet high, and the one-pair 8 feet 6 inches. There are eleven bed-rooms for lodgers on the one-pair, and two on the ground-floor. Two of the bed-rooms may be used as double-bedded rooms. There is a living-room for lodgers on the ground-floor, a washing-place and pantry, with small safe for each lodger; kitchen, scullery, tool-closet, sitting-room, and bed-room for superintendent and his wife; also out-houses, pig-sties, and privies. The cost of the building was about £500. If some plan similar to this could be brought into general use, I can hardly conceive anything more likely to be attended with benefit to the youths of our labouring population. Having now drawn your attention to the necessity of some improvement in the dwellings, as a necessary means of raising the moral and social condition of the labourer, let me further remark that I think he should also have a good-sized garden. I do not believe, however, that the allowing the labouring man a large allotment is any boon to him. Such an allotment acts, on many occasions, as an inducement to keep him from his regular employment; it often engenders an ill-feeling between the master and servant, and it is of little benefit to the latter, who might often earn as much as his allotment would yield him. One means, also, by which I think the condition of the labourer might be improved is by promoting as much as possible a good feeling between employer and employed. Where such a feeling exists, you will generally find a more contented, and consequently a better, class of labourers. There is a great deal of truth in the remarks made on the subject by the late Justice Talfourd, in his last memorable charge to the grand jury of Stafford, when he stated—"It is so much a part of our English character, that I fear we all of us keep too much aloof from those dependent on us; and they are thus encouraged to look upon us too much with suspicion. We think we have done our duty in our sphere when we have paid them the wages we contracted with them for, when we have treated them with that civility which our habits and feelings induce us to render, and when we curb our tempers and refrain from any violent expression towards them. And yet how painful is the thought that we have men and women growing up around us, ministering to our comforts and supplying our wants, with whose tempers and affections we are as little acquainted as if they were the inhabitants of some other sphere! This feeling arises from a kind of reserve, which is, perhaps, peculiar to the English character, and which greatly tends to prevent that mingling of class with class, that reciprocation of kind words and gentle affections, those gracious admonitions and kind inquiries, which often, more than any mere book education, tend to the cultivation of the affections of the heart, and the elevation of the character of those of whom we are the trustees. And if I were asked what is the great want of English society, I would say that it is the mingling of class with class; I would say, in one word, that that want is the want of sympathy." By sympathising with the labouring population in their many trials, by friendly admonitions and kindly offices, by a kind word spoken in season, we may often soothe the sourest temper, and render many a labourer, not only a better servant, but a better man, and improve both his moral and his social condition. It is an evil into which even now many employers fall — that of thinking that, if they ever converse with a labourer, they cannot afterwards so well exercise their authority as masters. By occasionally talking with a labourer, you show that, apart from his labours, you feel an interest in his welfare; and that, although you are his master, you and he are both members of the same community. Another means of improving their condition is, in my opinion, by affording them as much as possible regular employment. . As idleness often leads a labouring man to commit some crime, so regular work will generally tend to keep him honest. I admit that occasionally there are difficulties in finding employment, especially in some large parishes, for all our labouring population; but when it can be done it should. And I am convinced that, generally speaking, you will find the employed superior to the unemployed, both as regards their moral and their social condition. It is a bad practice to employ a man, say for three days in a week, and leave him to go where he likes for the other three. As an illustration of the evil of the one system and the advantage of the other, I would mention the case of a young man whom I employed some two years ago. Previous to that period he could not get regular employment, and consequently he took to poaching. Thinking I would give him a trial, I gave him work; and I have employed him ever since, and on no occasion since that time has he misconducted himself. I would not have this construed to mean that I think it right generally to employ men of bad character; for I believe it is an error which is frequently committed, the taking servants without any idea of their previous character—one result of this being, that a man of good character is often not rewarded sufficiently for it. I have before alluded to the evil arising from drunkenness, and the frequent attendance by some of our labouring people at the public-house. The best remedy for this evil would, I conceive, be the repeal of the malt tax, which would give the labourer the chance of making malt for himself, and brewing his own beer. It would also, I think, be an advantage in the same direction if beer were sold over the counter in the same manner as bread; tending to check that which often leads to evil—the congregation of the worst-disposed portion of the population at the public-house. The repeal of the malt tax would enable the poor man to enjoy his beer at his own fireside; and it would also be a means of checking intemperance, a vice which tends to an alarming extent to demoralize our agricultural labourers, and into which they are too frequently led, by not being able to brew a wholesome beverage for their own use. The abolition of the Law of Settlement would also tend to improve the labourer's condition, by giving him a better market for his labour; although I believe the day is fast disappearing when men could complain of too great an amount of manual labour. And now, having noticed some of the means which if employed would lead, in my humble opinion, to the improvement of the moral and social condition of the agricultural labourer, I come to another, which probably requires more than either of the former the exertion and interest of the labourers themselves. I allude to benefit societies. Such societies are one very essential means of rendering the labourer more independent, and consequently of raising him in the social scale. But, admitting their value, admitting the principle on which they are all founded—viz., the providing in time of health for approaching sickness or old age—to be just and right, I am sorry that in the manner in which many of them are carried out, there is much to be corrected. One very prevalent feature of these clubs in the south and west of England is the practice of holding their monthly and quarterly meetings at the public-house—the subscribers being allowed, out of the amount they pay, a certain quantity of beer, to remunerate the publican for the meeting being held there. These meetings are also very frequently held on a Saturday evening, and I can bear testimony to the evils which often result from the congregation on such occasions of large numbers at the beer-shop. A vast improvement has taken place in these respects in several districts since the formation of county friendly societies. In the case of the Hants Friendly Society, the subscriptions are paid at the parish-school, or some such convenient place, and the society is founded on safer principles than those on which too many of our village clubs are unfortunately based. It is an evil into which many of our labouring population fall, that when young and in a position to lay by a portion of their earnings, they often spend their savings foolishly, without any advantage to themselves, and regardless also of times of sickness in old age. I therefore think this is a question which ought to be taken up by those who occupy a prominent position in their respective neighbourhoods. It is a matter in which the occupiers of the soil themselves should interfere, whether for the sake of the improvement of the labourer's condition, or from the more powerful motive of self-interest. Now, having very imperfectly drawn your attention to the condition, in a moral and social point of view, of the agricultural labourer, and to the means which I believe would if carried out tend to his improvement, I would ask you to compare the man with barely any instruction, with a miserable cottage, with no means held out for his improvement, occasionally without regular employment, and who is driven as soon as sickness falls upon him or his family to go to the parish for relief—I say, I ask you to compare such a man as a labourer, to compare him as regards his moral and social condition, to compare him as a member of a great community, with the man who, taking advantage of the opportunities afforded to him, has used all his endeavours to gain instruction, is the happy inmate of a comfortable and tidy cottage, has regular employment, and has by means of a well-regulated benefit society made provision for the event of his being overtaken by sickness; and I think I may fairly assert that the moral and social condition of the latter will amply repay any efforts which have been made for his improvement. In conclusion, let me remark that I am fully conscious that I have very inadequately fulfilled the task I have undertaken: I have advanced nothing new; but, nevertheless, I am fully convinced that there is much which may, and much which ought to be done, to place the labourer in a better position—much in which both owners and occupiers of the soil may assist. I feel assured that, in most instances, if we seek to promote the comfort, the welfare, and the happiness of that important class whose condition we have been considering, we shall not fail to reap some of the advantages ourselves. In sympathizing with their wants, in endeavouring to alleviate their distresses, in affording them, by means of a better education, the power of acquiring useful information and of improving their leisure time, in giving them comfortable dwellings, and in the adoption of the other methods to which I have alluded, of ameliorating their condition, you will be amply rewarded, not merely by seeing around you an industrious, an intelligent, and a grateful peasantry, but by that which is of greater value—the consciousness that in your different spheres, and in your connection with an important class, you have endeavoured faithfully, fearlessly, and conscientiously to discharge your duty. (Cheers).

Mr. R. Baker (of Writtle, Essex) quite concurred with Mr. Spearing, in the main propositions contained in that gentleman's excellent paper; but after long experience and observation of agricultural labourers, after having devoted considerable attention to the subject of bettering their condition, he had arrived at the conclusion that their improvement did not rest so much on education as on the treatment they received when they had left school. It was at the period of emancipation from school that the children of the working-classes were most liable to sustain injury to their morals. There was nothing to attach them to their homes. Their parents, uneducated themselves, were careless about the education of their offspring, who consequently were suffered to roam whither they pleased during the long winter evenings, whilst during the summer days there was, of course, further inducement to wander away from home. Unfortunately, also, in many villages there were no means in existence for instructing them, and the beer-shop, too often, was the principal resort and attraction. In the parish in which he resided — Writtle, near Chelmsford—the education of the children was very well provided for. It had a good foundation, and other charity schools, upon a large scale, and the work of education was well carried out. Still, he was sorry to observe that the labouring classes there, as they grew up, were not better disposed than those of other parishes, where those advantages did not exist. This, however, applied more especially to the boys; for, as regarded the girls, they were in general permanently benefited, inasmuch as they were placed out at service, got into regular employment, or were kept by their mothers out of the reach of those temptations into which the boys so readily fell. But the boys would congregate in large numbers in the evenings; and, for want of the necessary control, would remain out late, and so imbibe vicious habits to a great extent. With regard to the cottages, what Mr. Spearing had stated was too true. There was no comfort for them there; the parents too frequently going to bed, and leaving their children out. He (Mr. Baker), with others, had long endeavoured to better the condition of labourers by improving their dwellings, and every year, during the last ten or fifteen years, he had erected a cottage with never less than four rooms. But the difficulty he had to encounter was, that unless he made a strict prohibition of the practice of letting, the occupier would be sure to take lodgers. It was necessary, therefore, that the proprietor should make such arrangements with his tenants as that the cottages should be kept free for the accommodation of their own families. Mr. Spearing had alluded to the allotment system, and he (Mr. Baker) was of opinion that that system had operated most beneficially, and done more for the reformation of the labouring classes, both young and old, than even education itself. At the present moment he had nearly one hundred allotments, consisting of twenty rods, or the eighth part of an an acre, each. This quantity he found quite sufficient, as much, indeed, as the men could cultivate without interfering with their daily employment, and he let it to them upon condition that the tenancy should be put an end to by either party giving to the other one week's notice—he (Mr. Baker) in every such case paying for the cropping of the ground. But as yet only one notice of that nature had been given. These allotments became, as it were, a sort of savings' bank, in which the labourer deposited his spare time, and in the aggregate the amount was considerable. In the summer evenings the field would be covered by the holders of the allotments, all hard at work; and in this way they were kept from the pot-house, or worse resorts of the idle and dissolute (Hear, hear). One thing, however, which he always inculcated on the labourers was, that they should never work on their allotments on the Sunday, and he was happy to say that they never attempted it. Another condition was that they should not grow grain crops; and this he imposed, because the less industrious amongst them might be disposed to sow a crop of wheat or barley, the cultivation of which would involve less trouble. But that was not the object of allotments, which were intended to employ spare time, and produce the largest returns. With regard to the best means of educating the young men, no doubt a great deal of good might be effected by providing a reading-room for them. In the parish in which he resided, evening schools were held in the large school-room at this season of the year. The attendance was on three nights of the week: the teachers gave their services gratuitously, and the young men were very anxious to be taught. The children of more tender years also received instructions in the Sunday-schools, which were exceedingly well maintained in the parish. When the evening school was commenced, he was told by a neighbouring clergyman that after the labour of the day it would be impossible to keep the boys awake, but he had heard of no complaint on that score. On the contrary, the boys were very attentive to their school duties, and would have no objection to continue them longer, if the teachers were disposed to remain. He was satisfied that the experiment of evening schools would in the end have a beneficial result, though having been only twelve months in operation in his parish, he of course had not yet seen the result. After all, the improvement of the moral and social condition of the labourer very much depended on the employers. The example set by the master had much to do with the formation of the character of his workmen. If it were seen that the master never deviated from the principles of rectitude, the labourer would readily copy his example; whilst, on the other hand, nothing could be more pernicious in its effects than equivocations on the part of the master in bargaining or settling with his labourers, or an attempt to escape from the consequences of a bargain when he found they were earning more than he expected. Many farmers were unwilling to employ boys at all. He for his part had always been an advocate for employing them in large numbers. At one time he never had less than 12 or 20 on his farm, and his practice was to place ten or a dozen of them at weeding or hoeing, under the guidance of a man in whom he could repose confidence. If a boy misbehaved himself, he was called out and admonished before his companions, and for a repetition of the offence he was ignominiously discharged. This system, if generally carried out, would, he felt assured, be productive of the greatest benefit. Some people seemed to think that education alone would accomplish everything for the labourer, the truth being that mere schooling only laid the foundation upon which to erect the superstructure of character and position. Give the labourer education by all means, but rely upon it you will never effect much unless with the master's co-operation; indeed, he should say, upon the whole, that the improvement of the moral and social condition of the lower classes rested more with employers than schoolmasters.

Mr. SIDNEY (of Peckham) was much gratified by the tone of the remarks which had already been made on that interesting subject. That was not the first time it had been discussed there. Recent events had convinced every observant man that the period had arrived when they could not afford to leave the labouring man ignorant; and if many persons had been slow in coming to that conclusion, that was owing in a great degree to the mistaken manner in which education had often been conducted. Persons were frequently met with, who declared that they were not in favour of educating the labouring population, because the best labourers that they had ever had were unable to read or write. Those who used such language could not be aware of the real object of education; and as to the labourers whom they praised, the truth was that they were persons of such superior minds that they could dispense with the ordinary aids of education. The labouring class, like other classes of society, required education to develope their faculties and render them useful members of society. Education must, of course, begin with youths; and here it was impossible to disguise the fact that the instruction given had not hitherto been generally of a kind which was useful to the labouring class, and attractive to the scholars. The truth was that the employers had, until lately, kept aloof, and left education too much in the hands of the clergy and others, who were not sufficiently aware what kind of instruction was most likely to prove useful. He confessed that, when he looked at the books which were generally used, he felt astonished—not that those for whom they were intended had learnt so little, but that they had learnt anything at all. The ordinary class of school-books treated almost of everything except what was most likely to be connected with the future life of the labourer. He was much pleased with a remark made by a Mr. Davis the other day, that he did not see why a boy who attended school did not learn the anatomical difference between the digestive powers of a horse and those of a cow—why a cow should not be fed in the same manner as a sheep, and so on. To this he (Mr. Sidney) would add, that he thought it might be very useful to afford explanations as to the principles on which the best agricultural implements were constructed. Every farmer who had had occasion to place new tools in the hands of labourers, must have found great difficulty in teaching his men "the reason why." There are plenty of teachers who are willing and eager to teach; and what was chiefly wanted was a class of books especially adapted to the purpose of instructing the labouring class; so that, while continuing to receive a large amount of scriptural instruction, including a knowledge of the curious birds and beasts found in Palestine, they might also be taught the difference between a Southdown, a Leicester, and a Cotswold, and between a good and a bad plough, and even be enabled to comprehend the steam-engine, which was now doing so much for agriculture. It was not uncommon to hear a labouring man say, when he was spoken to on this subject, "Well, sir, I have sent my boy to school, but I don't see that he is any the better for it." The great difficulty was, to get the children themselves to take an interest in their improvement. Even after you have taught them to read and write well, you have done little for them if you have not also provided proper books for them to read. He was extremely pleased to hear a gentleman of so much influence as Mr. Baker speaking of the necessity of establishing reading-rooms for the use of the labouring population. However well boys might have been taught at school, it would all prove of little use to them if they had not proper books to read after leaving school. What was needed in reference to this matter was, in the first place, a good supply of interesting books; and secondly, the means of making them accessible. He could not help here remarking, that a great number of persons in this country appeared to think that the labouring class required to be treated differently, as regarded the character of the books placed within their reach, from all other classes of society. If at the library at Mudie's, or the Athenæum, or the Reform Club it were attempted to supply readers with such tracts and publications as those of the Religious Tract Society, and nothing else; if at those places all the books on natural history, or any other kindred subject, were powdered, as it were, with a large number of religious quotations, no one would stand it. He knew it was to the clergy that they were most indebted for the education which had been given up to this time; but they must now put themselves forward in the movement, and endeavour to make education practical as well as religious; and with this view they should, he repeated, endeavour first to provide proper books, and secondly to give the labouring population an opportunity of reading them. They all felt, he thought, that it would not now do to attempt to keep back the education of the labouring class; and he hoped that agriculturists generally, including those who had hitherto stood aloof from the work, would now come forward and endeavour to teach those who had hitherto been the teachers. Their assistance would, he felt assured, be most cordially welcomed by those who had devoted themselves to the cause of education generally, and would produce a most favourable effect, not only upon the labouring classes, but upon the interests of the nation at large.

Mr. J. A. Williams (of Baydon, Wilts) felt that he had little more to do than corroborate what had fallen from Mr. Spearing in his able introduction. As to the landlord, he had a certain duty to perform in connection with the property which he inherited: that property entailed upon him, generally speaking, the care of a large number of cottages. At the same time, it must not be forgotten that the landlord's interest in his property was, to a great extent, a commercial interest. The landlord, in many cases, inherited an encumbered estate, having upon it a number of cottages, to place which in a proper state would require a considerable outlay on his part. He knew it was the landlord's duty at once to make the cottages on his estate fit for the habitation of the labourer and his family; but the question arose, whether he was to do this at an entire sacrifice of his own interest. In the West of England, where he (Mr. Williams) resided, the rent of a cottage seldom exceeded 1s. per week, or 52s. per annum. Out of this rent the Government demanded 16d. in the pound, while the tenant demanded that the cottage should be kept in good repair, and the vestry assessed the landlord for all occupations under £6 per annum. It might, then, be open to question whether the kingdom at large could fairly look to landlords as a class to erect such buildings as were suitable for agricultural labourers. At all events, when the landlord had made the requisite outlay, he might naturally expect to receive an adequate rent. Further, he believed it was the duty of the landlord to place the agricultural labourer in the position in which Mr. Baker had mentioned with respect to the allotment system. He thought the pith of that question lay in this:—that finding occupation for the agricultural labourer in his spare hours during the summer months would be the means of keeping him from the beer-house, which was the instrument of leading the bulk of agricultural labourers to anything but what was desirable. He dissented from Mr. Baker's opinion, that twenty perches was a sufficient quantity. The poet Goldsmith said, in his "Deserted Village":—

> "A time there was, ere England's griefs began,
> When every rood of land maintained its man."

He (Mr. Williams) hoped to live to see the day when every labourer would be provided with his rood of land, as was the case ere "England's griefs began." A "grief" indeed it must be to every right-minded man in the present day—to every man who took an interest in the welfare of the poor—to see the ale-house and the beer-house the only resort of the labourer. The landlord and tenant, combined, were in duty bound to provide employment for labouring men, after the ordinary hours when they worked for their master. Mr. Baker and he only differed, he thought, as to the mode of cultivation; Mr. Baker thought that twenty perches was sufficient for the labouring man, because he would not allow him to grow any white crops. Now he (Mr. Williams) differed from Mr. Baker on that point. He hoped the labourer would be found sufficiently honest to be permitted to grow a certain amount of white crops without exposing himself to the suspicion that he grew more per acre than his master could ever produce (laughter). There was an idea abroad that if the labouring man were allowed to cultivate wheat and barley, his produce would increase through the opportunities which he had of taking home a portion of his master's; and that his small wheat-crop would yield, rateably, double what his master's crops would yield under the highest cultivation. He trusted he should live to see the day when the labourer could be allowed to grow white crops, without its being supposed that he must rob his master every day to increase his production. As regarded the rood of land of which he had spoken, if the labourer were placed in a proper position, a certain portion of this would be required to obtain a sack of wheat or barley. If he made the best use of the offal of his cottage, he would be in a position to keep a pig. He would then require a certain amount of straw to litter his pig, and he would, to some extent, be a farmer—that was to say, to the extent of the land which he cultivated. The pig would be the stock on his little farm, producing manure to keep the land in condition. The straw which the white crop produced would help him to litter his pig, and, in its altered shape, would be returned again to the soil; and after the pig was killed, the labourer would have two flitches of bacon hung up for winter-consumption, in addition to the potatoes, cabbages, and so on. He fully concurred in the sentiment of the poet on this subject, and he hoped some day to see every honest labourer possessed of a rood of land. Mr. Baker had observed that in his agreements with labourers with regard to allotments, he always made it a condition that no work should be done on the Sabbath-day. He (Mr. Williams) was happy to say that in the West of England they never dreamt of such a thing as working on Sunday. He did not mean to affirm that the Sabbath was observed there as it ought to be; but anyone might go from parish to parish, and almost from county to county, without seeing any of the labouring population engaged in manual labour. If the labourers were improperly employed on the Sabbath, it was in the beer-house, not on the allotment. He was happy to say that the clergymen in his neighbourhood were getting up evening-schools, the existence of which must tend in a great degree to raise the condition of the labouring class. The great point, after all, was to get the labourers as a class to feel an interest in their own improvement. The natural depravity of the heart inclined them to attend a public-house in preference to a place of worship, which, he was sorry to say, was the general rule in his neighbourhood. The great question was, how the evil was to be cured. Education and employment might do much; but in order to check the evil propensities of the labouring population, and especially of those who had more money than they required for food and clothing, it was further, in his opinion, the duty of the Government to propose a stringent law for the purpose of putting an end to tippling in beer-houses on the sabbath-day, which greatly impeded the landlords and tenants in their efforts to elevate the moral and social condition of the agricultural labourer. It behoved them all to call upon the Government to nominate a committee of enquiry on that subject, in order to ascertain whether it was not a necessary element of improvement, to make it a breach of the law to enter a public-house on the sabbath-day.

The Rev. C. T. James (of Ermington, Devon) observed that the moral and social conditions of the labourer were so intimately blended that they could not, in fact, be separated. A great deal was said in the present day about education; but it was not so much the education that was wanted as the training of the child. There was the rock upon which people generally split. There was the education of the heart as well as that of the head. People talked of head knowledge, but they had had too much of that. No education was worthy the name which did not fit the child to be a useful and industrious member of society. Then came the good citizen, and after that the good Christian. As regarded the allotment, the great thing which they had to do was to promote a taste for domestic comforts and home enjoyments. If an allotment serves to attach the father of a family to his home, and led him always to return to his wife and children after his labour for his employer, it was a national blessing. As regarded the size of the allotment, he thought that was a secondary matter, and it must depend, in some degree, on the supply of labour in the district. In many parts of England there were not labourers enough to till the soil. For example, he lived in a grazing district in a remote part of Devonshire, where, in consequence of the demand for men in the dockyard, it was often impossible to obtain a sufficient number of labourers without paying a very high rate of wages. A rood of land was certainly the labourer's best friend, if it served to attach him to home scenes and to home enjoyments. With regard to the young, there was one point which had not yet been touched upon. The great difficulty of the present day was to undo the evil habits which youth had imbibed. It often happened that the friends of the labouring-classes had nothing to do with the children till they had become labourers; but they might depend upon it that the maxim was true, that just as the twig was bent so did the tree incline; and their duty was to grapple with evil habits while the mind was yet tender. They might rely upon it that if they paid proper attention to the wants and improvement of the labouring population, they would be rewarded with gratitude and fidelity. Another thing that was especially needed in many rural parishes was proper opportunities for spending to advantage the hard earnings of the week. He thought it would be a national blessing if the masters in England would make a point of paying those whom they employed at any part of the week except on Saturday night. The moral degradation of England was enhanced ten-fold by the practice of paying wages on Saturday. It was well known, too, that there were many market-towns where the market was held on Saturday, and, in such cases, unless the wife had the wages to lay out on the morning of that day, it was almost impossible that she could obtain full value for her money. A very important enquiry took place recently, before Parliament, in reference to the adulteration of food. On this point he thought that in cases in which the village shopkeeper was found not to supply a genuine article, an effort should be made to introduce, from another parish, some person who would supply the real article. The labouring class deserved such consideration at their hands, and sympathy in such matters would tend to dissipate those clouds of suspicion and distrust which had too long separated master and man. Again, he thought it was the duty of employers to be on their guard against punishing too severely the misconduct of persons belonging to the labouring population. Take, for example, the class of domestic servants. How many persons of that description had been cast friendless on the world, merely because they were not faultless! Were they themselves dealt with according to that rule, what man amongst them could stand the test?

Mr. J. Pain (of Felmersham, Beds) said, in Bedfordshire it had been the practice for the last thirty years to pay labourers on Friday. He believed the failure to do that was quite an exception. The object of the rule was to enable labourers and their wives to spend their money to the best advantage.

Mr. Williams added that he had never paid his own labourers on any other day than Friday.

The Rev. C. T. James wished to say further, that during the period when he was at Chelmsford, where he was connected with a large body of labourers, many of whom belonged to the railway, as many as two or three hundred men came to his evening school. Two of these persons were grey-headed men, upwards of seventy years of age, who came to learn to read. He also had a servant between thirty and forty years old, who at that age learned to read and write at an evening school. They might depend upon it that there was no such effectual means of retaining a hold upon young people as the opening of evening schools.

Mr. J. Thomas (of Lidlington, Beds) concurred in the opinion, that after the child was old enough to go to work, it was rather by seeking to form his principles aright, than by giving him book-learning, that they could hope to make him useful as a farm-labourer. He agreed, too, with Mr. Baker, as to the influence of the example which the farmer set in his dealings with the labourers; and he thought that a good example and promptitude in correcting vice, or any approach to it, on the part of the employed, would prove more beneficial than any amount of mere book-learning. During the twenty-two years that the new poor-law had been in operation, he had scarcely ever known an educated lad of fourteen who had come out of the workhouse turn out anything but a scamp in after-life: and this he attributed, not of course to the education, but to the bad influences by which the child had been surrounded. Infant-schools and evening schools were both of great importance in reference to the elevation of the labouring classes. As regarded the allotment system, he perfectly agreed with Mr. Baker, that the quantity of land in the occupation of a farm-labourer should not exceed half a rood; and he was sure that, in populous parishes, the farm-labourer would not have time to attend to more, without infringing on that duty which he owed to his master in receipt of a fair day's wages for a fair day's work. As to the halcyon days referred to by Mr. Williams, that gentleman seemed to have taken the poet's words literally; as if at the period alluded to every man resided upon his rood of land, and brought up his family on it. The soil of England fed a much larger population now than it did formerly; and he could not think the words fairly bore the interpretation which Mr. Williams seemed to have put upon them. [Mr. Williams disclaimed having meant what Mr. Thomas appeared to suppose.] It was, he maintained, to the good example of the master, to his diligence in rewarding those who exerted themselves, and in punishing those who deserved punishment, and to the general good training of the children to farm duties—it was to these causes that they were chiefly to look for improvement. In his part of the country, it was the custom on most large farms to train children up, as it were, in gangs of about twenty boys, under an experienced farm labourer. At Michaelmas, those boys who were able to earn three or four shillings a-week were placed in a higher class. In addition to their wages, such of the boys as deserved well, received at the end of every week a reward-ticket, marked 6d., for good conduct. On his own farm this was generally obtained during the whole fifty-two weeks of the year. On New Michaelmas Day the tickets were brought to him and exchanged for one of twenty-six shillings, by means of which the possessor was enabled to obtain at any neighbouring shop a supply of clothes for the ensuing year. If a ticket happened ever to be refused, such was the anguish of mind exhibited at losing it, that he verily believed the lad would rather be tied to a whipping-post and flogged than lose his rẽward-ticket. This operated, in fact, as a system of reward and punishment; and when, on the 29th of September, the boys came to him in their new-fledged clothes, it would be difficult to imagine a more merry little pack. He thought the adoption of such a system must tend to make the children good boys and good labourers.

Mr. Williams said, with respect to allotments, he had laid it down as a rule, that the labourers should not work upon them between the hours of 6 and 6; consequently they could not encroach upon the time which belonged to their masters.

The Chairman wished to make one or two remarks before the discussion terminated. As regarded the employment of boys, described by Mr. Thomas, he would observe that he entirely concurred in what that gentleman said about it, having seen the system in operation upon his farm. Certainly the manner in which the little fellows cleaned the turnips was much more expeditious and more easy to the boys themselves, and better for the employer, than the manner in which similar work was done on his own farm; and, if it were merely on account of what he witnessed in that respect, he felt that he was repaid for any loss of time and any expense which he incurred by his trip into Bedfordshire. The system of employing a certain number of boys would be extremely beneficial in his own county (Sussex), where it was necessary always to have horses running along one before the other, and a boy to drive them. The men were very averse to an alteration of the system, perhaps, in a great degree, lest their children should be employed as ploughboys. In parts where this custom prevailed, it would, he thought, be very beneficial to adopt Mr. Thomas's system.

Mr. Pain: How about the bullocks? (laughter.)

The Chairman said, of course, if bullocks continued to be used, it would be necessary to go on as they were doing in Sussex; but perhaps that system would go out of fashion: at all events the employment of boys, as they were employed by Mr. Thomas, was a means of carrying out one great object which they had in view, viz., the proper training of children after they left school. By placing a number of boys under the care of a good labourer, they might secure a more skilful and intelligent set of men than they generally had at present.

Mr. SPEARING, in his reply, said that, as regarded the size of allotments, he concurred in the opinion expressed by Mr. Baker, and he added that the payment of wages on a Saturday was not a general practice in his own district.

On the motion of Mr. Thomas (of Bletsoe, Beds), seconded by Mr. Ramsay (of Derwent, Newcastle-on-Tyne), it was resolved, "That the condition of the labourer would be best improved by improved house accommodation, judicious education, a proper employment of spare time, and a continual attention to his wants on the part of the employer."

Votes of thanks having been given to Mr. Spearing and the Chairman, the proceedings terminated.

TUNBRIDGE AND HADLOW AGRICULTURAL ASSOCIATION.

On Wednesday, Oct. 29th, this society held their annual meeting and, after the distribution of prizes, dined together at the Town Hall. At half-past five (the principal company having assembled) the noble chairman, the Marquis Camden, K.G., accompanied by Lord William Lennox, S. Allcyne, Esq., T. F. Baily, Esq., Rev. E. Vinall, S. Cartwright, Esq., and the gentlemen forming the committee, entered the room.

After an excellent repast, furnished by "mine host" of the Rose and Crown, the usual loyal and patriotic toasts were given. Mr. Ashpitel then rose to propose the health of the Marquis Camden, in a most eloquent speech, which was warmly responded to by his Lordship, who dwelt with considerable force upon the merits of the association.

Lord William Lennox was then called upon to propose the President and Vice-presidents, which he did in an able manner. He felt that great credit was due to any gentleman who at the onset of an undertaking came forward to support it. Many shrunk from the task, and waited until it had gained a degree of popularity, and then, and not until then, gave their name and support. His Lordship proceeded to say he was sorry that illness and other causes had prevented the attendance of the gentlemen whose healths he was about to propose. The Rev. Sir Charles Hardinge was absent from a late family bereavement, the loss of a brother, one whose death must be felt not alone in the county of Kent, but throughout the empire; for the brother-in-arms and friend of the late Duke of Wellington was a man for whom England mourned, as a brave soldier, a devoted subject, and an honest statesman. Lord William then entered at considerable length into the object of the meeting, pointing out the advantages that were gained by a friendly intercourse between landlord and tenant, and the benefit derived from giving innocent recreation to the labourer instead of the brutal exhibitions that once disgraced the country fair and marts, happily now extinct. He then referred to agriculture as the mainstay of the country, paying a just compliment to the brave men who from the rural districts rallied round the standard of England during the last war, and who, albeit brought up to peaceful occupations in the tillage of the land, had found a warrior's grave on the barren soil of the Crimea, amidst the sorrow of a grateful country. In conclusion, Lord William referred to the duties of landlord, tenant, and labourer, strongly urging the principle of mutual co-operation, and after a graceful compliment to Lord Camden, whose practice kept pace with his theory, declared that if there was a distinction more enviable than another, it was that of a man being able to say, "I live on the farm occupied by my father and grandfather, and my greatest pride will be to leave an untarnished name and the farm to my children and childrens' children."

Thomas Farmer Baily, Esq., of Hall Place, then rose, amidst great applause, to propose the health of the Secretary. He dwelt with much felicity upon the onerous duties of that respected gentleman, Mr. W. Johnson, through whose exertions the society had been brought to its present pre-eminent position, and who in himself was a good practical farmer and an excellent tenant. Mr. Baily then said that he entirely concurred with the remarks that had fallen from other speakers. He felt that it was the bounden duty of every well-wisher to his country to support agriculture; that as far as he was personally concerned it should have his warmest attention, and that nothing would give him greater pleasure than to forward in every way in his power the cultivation of the soil, and a mutual good feeling between all connected with it (cheers).

The Secretary having returned thanks, the meeting broke up.

FARMING PAST AND PRESENT, PRACTICAL AND AMATEUR.—There was a time when the farmer was looked upon as a clod-hopper, a man whose knowledge of literature extended no further than the last dying speeches of criminals hawked about the nearest market town; whose chemistry extended only to the application of lime to the land, and that in exactly the same condition as it was applied by the people of China and Egypt thousands of years before the invention of his own breeches; whose acquaintance with science enabled him to associate the planets and stars with witches and gipsies; a being whose domestic as well as farm economy enabled him to say, that the fowl might live in the barn and the cat in the dairy, provided they were both reared upon the same farm! That was the old-fashioned farmer: he was a man whose knowledge of the healing art was limited to an acquaintance with "Daffy's Elixir" as a sovereign remedy for outward and inward complaints—the only two types of disease with which he was familiar. His politics were very much like those of the squire; he went to the election, voted for the squire, and came home and got drunk with the squire's servants. There were very few such men remaining now, and the fewer the better. They were fast passing away; changes were coming upon the age, which were not to be resisted. It had been said that we were a nation of shopkeepers. He thought, however, that we were becoming rapidly a nation of farmers. Only a little time since he was being served in a grocer's shops when the tradesman volunteered him all sorts of information about the proper means for sowing his corn, and ran over all the various processes of farming. No doubt the man had got the agricultural fever, and, like persons generally when in the last stage, he was wandering. The cold stage would come upon him in due time, when he had taken a few acres of wet land and put some of his fire-side experiments to the test in the open field. But there were others dabbling in farming besides the shop-keeper. The other day, the Lord Chief Baron of the Exchequer went to his court to receive the sheriffs of London, who, upon such occasions, usually had their private histories related. One of the two sheriffs was their old friend, the agricultural saviour of the country, Mr. Mechi. It seemed that the Recorder went into his history up to a certain point, and the Chief Baron seemed rather drowsy; but when Mr. Mechi's agicultural experience was brought forward, it was wonderful to see or read how his lordship brightened up. After dinner, the Baron made a speech, and it would really have been surprising, if it came out from any other lips, how much eulogy could be expended upon one man. They might look right and left, but they would find that others were no better. The rector and the lawyer, the parson and the squire, were all following the same pursuit; and they might almost see every market day gentlemen poking their fingers in the ribs of the animals, and very often in the wrong place. The farming mania had seized upon a great many. It would, however, show that the education of the farmer must be no longer neglected; that something more was necessary in preparing themselves for that occupation, if they would keep their position; and unless they strove by other means to keep that position, other and better men, more adapted to the civilization of the age, would step into their places.—MR. ROBERT L. JONES, at the Pitminster and Corfe (Somerset) Agricultural Society.

KENNINGTON AGRICULTURAL AND CHEMICAL COLLEGE.

LECTURES ON THE GENERAL PHENOMENA OF THE EARTH, HAVING REFERENCE TO THE PRODUCTION AND MAINTENANCE OF ORGANIC LIFE.

BY CHARLES JOHNSON, ESQ, PROFESSOR OF BOTANY, GUY'S HOSPITAL.

LECTURE IX.

A sphere, constituted like that of the Earth, might have remained through eternity uninfluenced by other agencies than those which govern matter in its simpler state, and which, in constantly recurring action around us, we classify as mechanical and chemical laws and powers. We really know not anything of the origin of these, but, familiar with their effects, are enabled to calculate upon their undeviating character, anticipate every result, and render it subservient to our own purpose and convenience. And yet these mysterious and constant powers, whose operations are manifested throughout the universe, are disturbed, if not indeed set at nought, upon this world of ours, by one even more inexplicable. The heterogeneous elements are compelled by this innovator to enter into combinations more complicated, and adverse to those which regulate the disposal of matter in the aggregate. The simple and strictly-measured compounds of earth, of salt, of air and water, under this new influence assume other forms and characters; the affinities that held them together and the resisting force that prevented their union are alike suspended: the matter has become *organic*. In what consists the change, but in its subjection to a principle of a higher cast and greater proportionate consequence?

The pebble and the sand are but fragments of the broken rock, and are still rock. The crystal, with its determinate sides and angles, is but an agglomeration of previously separated atoms drawn together by the force of attraction, and is alike inert as to any farther change. Once formed, whatever alteration may take place in the mineral body, it must necessarily be the result of external agency; the mass contains within itself neither capability of modifying its outline, nor of assimilating other elements to its own extension or multiplication—it is a merely passive existence. Such appears to have been originally the condition of our planet as a mass of matter; but life came upon it, and with the introduction of its earliest and feeblest effort commenced the era of organic being and of the vast series of changes which that involved.

While the investigations of geology prove to us that there has been, during long successional periods, a gradual addition to the variety and complexity of living frames, they have hitherto afforded no clue to the determination of the epoch at which their career commenced. Even the crystalline granites, that everywhere limit our researches downward, may, like the lavas of existing volcanoes, confound in their heat-altered texture the elements of earlier vegetable and animal forms, the predecessors of those whose remains we cherish in our collections, as precursors of that creation of which Mankind constitutes the highest and the last. But as the reciprocal relations of all the modifications of matter must always have been the same, the laws which govern the universe having never varied since its countless orbs appeared in space, and as the little that we can learn of things past corresponds with what we know of those at present around us, the general history of organic being, in the most distant eras of its ascertained existence, is involved in no greater mystery than that of our own times; and every observation proclaims the dependence of the higher and more elaborated upon the lower and less complicated, as well as it does the necessity of a longer or shorter preparation of the mineral elements, ere they are fitted to enter into those combinations which belong to the more advanced conditions of animal and vegetable life. The succession of natural phenomena where that life is concerned—the whole theory of cultivation—the subsistence and growth of both plant and animal, are based upon this circumstance, and their investigation furnishes abundant evidence of its truth.

Let us first survey the process by which the earth became a habitable world. The records have been as well preserved for our use as those of human acts and works—nay, perhaps they are even more explicit, and more easily read by those who take pains to study them. As the antiquary traces, to his own satisfaction, the dates of the additions to an ancient building, by the different styles of architectural embellishment that its remains present; so does the geologist assign, with equal decision, to corresponding epochs in the history of the globe, the peculiar organic forms imbedded in the varied rocky layers that compose its crust; so does he trace their existence as it commenced and terminated, under the successive changes by which that crust became elevated, depressed, or otherwise modified, during its progress toward the present condition. The decision, on the broad scale of comparison, is no more liable to error in the estimate of the occurrences of periods of countless revolutions, when time was yet unmeasured, than it is when applied to the puny centuries of human career. We will inquire into the nature of these records, and note the circumstances attending their preservation. We are too apt to regard creation as a succession of instantaneous acts; to think of eternity as but a lapse of days and months and years, of which a small allotted number alone was dedicated to its fulfilment. The uninspired northern mind translates the figurative language of ancient records literally; and then, in its ignorance, not only depreciates the labours of science, but would place upon its votaries the brand of impiety, because their discoveries, in opening more comprehensive views of natural phenomena, have tended to remove the majesty of mankind a few grades lower than human pride and presumption had previously assumed for itself. The unveiling of truth and immeasurable distance neither places us beyond the reach of Divine care and goodness, nor renders trust and obedience less paramount objects of our duty than they were when belief was blind. Every advance in real knowledge affords new proof of man's dependence, and of the unerring wisdom of those dispensations under which his existence commenced, and that are accompaniments of his career on earth.

With all the beautiful and necessary adaptations that we trace upon this varied globe, as ministering to our welfare, we cannot avoid the reflection, that as it is to us at present, so has it been to our predecessors in past time; that, indeed, however salutary the repetition of changes to which its surface is subjected, still that surface is a ruin, that is, it is an irregular mass of its own dislocated fragments mingled with the scattered remnants of vegetable and animal beings. Nay, that, according to a moderate estimation of the numbers of the human race alone that have been born and died since the creation of mankind, were their substance equally distributed over the lands now existing, the bodies of no fewer than five persons would rest upon every square foot of its surface; and when to these are added the countless multitudes of inferior grades of organic structure that lived before and with them, who would venture to compute the amount? But the constant recurrence of elementary changes and of internal convulsions transforms from time to time this promiscuous cemetery of the past into a world of beauty and enjoyment for the present.

As the fragments worn and broken by the action of water from the first-formed mountains, rolling down their sloping sides, would naturally tend to collect in the largest quantity immediately around their bases, the result would be the eventual formation of a low island shore around each, with the water gradually deepening beyond; and where many mountains formed a continuous chain, as in the case of the Andes, the whole might in time become connected in this way, and constitute the first framework of a continent, aided in its subsequent extension by the uplifting force of successive internal convulsions.

The dissolving power of water enabling it to take up varied, though in many instances only infinitesimal, portions of every mineral element with which it comes in contact, especially under a higher degree of temperature than now exists in the ocean, would render that medium competent to the nourishment of organic beings, of whose active and ever-changing substance it constitutes, under every form of animal and vegetable structure, the largest and most essential proportion; hence the earliest of these were probably aquatic. Successors, perhaps, of countless multitudes of minuter and less complicated creations that had given them birth, and had followed and superseded each other during ages equally inappreciable as are their numbers by human estimation, were produced—corals, mollusca (shell-fishes), and crustacea (crabs, &c.)—which successively, like their predecessors, multiplied and died; and the sand, and the mud, and the rocky fragments continued to be detached and washed down, burying the remains of the dead, and even entombing by myriads the living. The convulsions of the earth's crust were still frequent; uplifting in one place, sinking that which had been elevated in another: and the accumulating mixture of sand, mud, or pebbles, and animal or vegetable matter, would be raised at times above the watery surface with the bottom on which they rested. Thus it is that we now find marine animal remains even on the summits of existing mountains, as among the Pyrenees, at an elevation of ten or eleven thousand feet above the sea. These have been afterwards, again and again in numerous instances, acted upon by the wave and the torrent, and still more intimately mingled; and thus by successive elevation and wearing down, the elements necessary to feed the terrestial plant, and through that the higher forms of the animal kingdom, were brought together, and became universally present in the material that was hereafter to compose its sustaining soil.

The accumulation of thousands after thousands of feet in thickness of the earlier alluvial rocks indicate the vast provision stored within them for the maintenance of after-life.

The lowest forms of animals and vegetables contain the smallest amount of those elementary combinations termed proximate principles, which are essential to organic existence—hence such appeared the first; and of these the more simple preceded the more elaborately developed, all perfect in their kind, and equally adapted to the convulsive periods in which they were created. After the corals, and the shell-fishes, and their near allies, had been long the most conspicuous inhabitants of the primitive ocean, the true fishes seem to have been introduced among them. The earliest of this lowest type of the superior animals, probably few in number, bore no resemblance to those with which we are now familiar, being covered with strong shell-like armour, instead of yielding and pliant scales.

Change progressed, and the increasing dry land now began to be clothed with vegetation. Eventually forests sprang up, alternating with swamps and prairies, with their gigantic reeds, and ferns, and grasses, flourishing with all the overpowering luxuriance of a tropical climate, owing to the heat of the surrounding waters, added to the still only partially cooled condition of the earth's crust beneath them. This vegetation—with few or no land animals, not even insects, to consume it—was destined to accumulate for the production of those vast deposits of coal, which centuries after centuries of human labour seem at present to be incapable of exhausting. The beds of incipient coal, after being thus formed, sank in succession below the ocean level, owing to the gradual lowering of the rocky crust above which the trees and herbs that produced them grew; and after being buried beneath the waters, and covered by their action with thousands of feet of mud and sand, the whole was again uplifted, until the surface of the sand and mud became dry land. At this time—that is, while the vegetation in question was growing and accumulating—the only terrestrial animals that probably existed seem to have been of the lowest reptile form, and seeking their food upon the shallow shores of the rivers, lakes, or seas, being themselves semi-aquatic.

All of these earlier examples of vegetable and animal being afterwards ceased to exist, and were replaced by others. Fishes of different character and attributes, many of much larger size than those which had hitherto appeared, sported in the waters; and then huge swimming lizards came among them; afterwards birds and insects dwelt upon the earth, and other lizards flew about in the air, as bats now do, and fed upon them. But the multiplication and the life of all these varied forms passed away or ceased, and another era commenced upon this changing world.

All of these previous organic existences seem to have been but so many preparations for the ultimate introduction of higher forms, already prefigured in the structure of the bird and of a few small land-quadrupeds, the creation of which may have been coëval with that of the feathered race. In accordance with this view, at a still later period we find the places of the huge swimming lizards occupied by the warm-blooded seals, the whales, and the dolphins; while, on the land, the now familiar forms of grazing animals and of beasts of prey began to predominate. The earth had cooled towards its present condition; the differences of climate upon its surface had become more marked; and after a succession of removals and replacements of species in both animal and vegetable kingdoms, and a long series of geographical changes, the action of which we are able to trace in the present configuration of the lands we dwell upon, the earth was ready for the habitation of mankind.

This successional production of higher and higher forms of organization—admitted as it is in regard to the animal kingdom with little doubt or cavil by the historians of the pre-Adamite world, for such we may term geologists—is far less conspicuously illustrated in the vegetable. The more readily perishable character of the hardest plant tissue is here a source of difficulty. Water, the most constant, if not the most powerful, agent under which the recorded changes have been effected, is, at the same time, one most energetic in organic decomposition; and its action on the tender vegetable fabric has left comparatively little for our examination in this department, unless in a few instances where the submersion and subsequent interment have taken place under circumstances peculiarly favourable, or the rigidity of the tissue, or the presence of a large proportion of tannic acid in the plants, has rendered decomposition a slower process than ordinarily. All of the lower grades whose structure is simply cellular have disappeared, and so may likewise the greater proportion of the flowering plants of those eras antecedent to that of the existing creation. Hence some persons have been led to consider that the absence of any remains of the higher forms of the latter in rocks of very early formation may be no substantial proof that such forms were wanting among the copious vegetation of primordial times; nay, that the more elaborate structures of exogenous plants might have occupied their several places, as they now do, among the ferns, reeds, and pines during the carboniferous period. The assumption that such was the case might not be unreasonable, were not analogy wanting among the more determinate fossil remains of the animal kingdom belonging to previous and later periods.

We must pause here before tracing those existing parallels which afford less contestable evidence in favour of our own views, than mere counter assumption. The subject is too important to be discussed at the conclusion of a lecture, or to be allowed to rest upon the questionable basis of a negative. At the same time it involves others, which require some preliminary and careful observation. Before entering upon these, lest we should lose sight of the object with which this course of lectures was commenced, we cannot do better than reflect for awhile upon some of the conditions that have resulted from those mechanical changes that have been the subject of our previous discourses; and that, while leading to those modifications without which the varied organisms of the existing world could not have been called into being, have fulfilled others intimately connected with man's career, whether past, present, or future.

Apart from all other considerations, the benefit that has accrued from the various disturbances which have taken place in the earth's crust, is rendered evident by a very little observation upon the present disposition of those rocks with which we have become acquainted, either, as immediately underlying and giving character to the soil, on the productiveness of which our subsistence is dependent, or, as they have been successively brought to light under the varied operations of human industry and perseverance. Nor need we travel far to discover this important fact, our own land affording one of the most striking examples in the value and diversity of its natural productions. Had the sedimentary or alluvial rocks remained in the position in which they were at first deposited by the flow of water, accumulating over each other to the thickness of hundreds and thousands of feet, as we know that they have done, the greater number of the most important mineral substances, the metals especially, must have remained unknown to us, and thus some of the chief incentives to and agents of human invention have been withheld. In those parts of the world in which the disturbances have been slight, or where subsequent sinkings of the broken strata have occasioned them to be covered to great depths by more recent alluvial deposits, the supply of many such materials is dependent upon commercial communication with other countries where they have been more extensive. Perhaps, within a similar extent of surface, no territory upon the face of the earth is more diversified, in a geological point of view, than England; and this circumstance has not only contributed to that varied fertility of the soil, upon which the primary increase of its population depended, so far as supplies of food were essential, but it has been the basis upon which its manufacturing and commercial importance is founded. The eastern side of the kingdom is comparatively level; toward the west and north it is mountainous and rocky; and it is in these latter districts that our principal mineral productions—metals, coal, and rock-salt are chiefly obtained. A glance at a geological map of the country, assisted by the sectional diagrams with which such maps are accompanied, will enable us to recognize the causes that have led to this variety of its surface, and of its rocks and subsoils. The granite of Cornwall and Devonshire, of Leicestershire and Cumberland, presents the appearance of having been forced upward through the overlying sedimentary rocks, thus producing the diversified inclination by which the latter are characterized throughout. This uplifting of the slates, sandstone, and limestone, deposited one over another during different periods, has been attended by cracks and dislocations, which were afterwards more or less filled with the ores of tin, lead, copper, and other metals, sublimed from beneath. Had the disturbances of the rocks in which such metals are now found not taken place, or, had their action been less powerful and general in their effects, the metals must have remained at a depth unattainable by human industry; indeed, in all probability, the greater number of them altogether unknown: while deposits of rock-salt and coal, covered by an impenetrable thickness of rocky substance, settling over them in after-periods, would have been similarly concealed. Whence, under such circumstances, could have originated all the necessary engines of civilization and refinement that are now in action? what amount of ingenuity could have produced their substitutes?

Had the same undisturbed condition of the crust of the globe prevailed through all its lands, man must have continued in the simplest state of society of which his nature is susceptible, instead of advancing as he now does daily, hourly, to a knowledge of his own capabilities, and of the many wise dispensations under which he is enabled to employ them, to the fulfilment of the grand problem of his earthly existence.

THE TRADE AND COMMERCE IN EGGS AND POULTRY.

BY P. L. SIMMONDS,

AUTHOR OF "THE COMMERCIAL PRODUCTS OF THE VEGETABLE KINGDOM," AND LECTURER ON THE STAPLES OF COMMERCE AT KING'S COLLEGE, LONDON, &C.

In the Note-Book, page 707 of the *Journal* for March, 1855, it was remarked, "poultry is far too much neglected by our Scotch farmers." Unfortunately, the reflection is of more general application, and to some extent also applies to English farmers. It is, indeed, too true that the poultry are kept merely to supply the house with eggs, or to furnish a dish for the table, without any systematic view to profit; and in very many cases, from want of proper attention, an egg is a rare commodity in a farmer's house for a considerable period of the year.

In noticing the food of London in the last number of the *Journal*, poultry and eggs were again adverted to; and it may therefore be useful to complete the data, and amplify the statements then advanced.

The subject of poultry-breeding has often been discussed in these pages. There will be found a paper in the eighth volume of the *Journal*, p. 509; and Mr. England's prize essay on the rearing and management of domestic poultry was published in the fourth volume of the *Transactions*.

Without even glancing at the recent poultry mania, which has been productive of little or no benefit to the general interests of poultry-breeders, but was taken up more as an expensive hobby and source of amusement by certain classes, I propose confining myself chiefly to the commercial aspect of the question, and furnishing a few statistical details for the consideration of the farmer.

It is still a mooted point with many, whether the rearing of poultry in this country be a profitable source of industry or not. I am inclined to think that it is; and my impression is fortified by very many returns and balance-sheets appearing in the agricultural journals from time to time, showing the comparative receipts and payments. Without, however, going specifically into this as a business question, it will certainly be well to place before your readers the figures indicating the extent and magnitude of the trade, foreign and domestic, as far as can be gleaned from the returns and estimates available for reference.

It has been well observed that poultry is a kind of stock which fits in readily with other animals, consumes produce which would otherwise be wasted, requires little space, and yields a return during life as well as when killed for the market. The counties of Bucks, Norfolk, Cambridge, Herts, Kent, and Surrey derive large profits from their supplies of eggs and poultry to London. From three to four million head of poultry are annually sold in the metropolitan markets. Why, however, should we be so dependent on the Peninsula and the continent? Why should we receive supplies from such distant quarters as Egypt and America, when our domestic produce could be so considerably increased?

To the grain-producing farmer it may be doubtful whether the probable profit on raising poultry will compensate for the annoyance and depredations committed on his seeded fields; yet if blessed with a thrifty housewife, the largest grain-farm may derive some considerable return from a poultry-yard. Barn-yards will afford an ample supply of food for poultry during many months of the year, since few farmers thrash their sheaves so thoroughly as not to leave sufficient grain for feeding and fattening fowls and chickens. There are, however, many persons not extensively engaged in cultivating the cereal grains, who can give a poultry-yard all due care and attention, rearing poultry of various kinds for sale, and obtaining from the occupation a very large profit. This source of advantage is the more promising when we consider that the large consuming centres are all within a day's reach (or less) by rail or steam, from most of the producing localities. Commerce owes much to the influence of steam, but agriculture is scarcely less indebted to the same power. Immense pens of poultry and crates of eggs are purchased in the Irish markets, and shipped by the steamers to Glasgow, to Liverpool, and Bristol. Taking everything into account, and examining all the advantages derived by cheap and rapid transit, the producer of food profits, perhaps, as much by the steamship and the locomotive as the manufacturer of clothing. As articles of luxury in crowded cities, poultry and eggs usually command high prices, offering inducements for the propagation to all who can make the needed arrangements, and cause a small share of attention to be given to the yards. Eggs, chickens, and feathers are the principal sources of profit from poultry. When we come to investigate our foreign supplies, we find poultry, in the official trade returns of imports, so mixed up with rabbits and game, that it is difficult to get at the precise amount of poultry alone received from abroad. The total declared value of the collective imports in 1854, under this head, was £38,876, of which three-fourths came from Belgium; France and Holland being the other countries from which the supply chiefly came.

Poultry are much in demand at the principal sea-ports as live stock for passenger-ships. Domestic fowls, turkeys, geese, and ducks are brought to Liverpool, not only from the surrounding rural districts, but in immense numbers from Ireland and Wales. Large flocks of turkeys and geese are driven along the turnpike roads from Liverpool to Prescot, St. Helen's, Warrington, Manchester, &c., and also exported for ships' stores. Great quantities of dead poultry are also forwarded by railway in crates and hampers to London and the manufacturing districts. The total number imported into Liverpool in 1852, dead and alive, according to the calculations of Mr. Braithwaite Poole, the manager of the London and North-Western Railway, rather exceeded in number 3,000,000 head, in weight 4,000 tons, and valued at £150,000.

The same able statist, in his "Statistics of British Commerce," estimates the average annual production of poultry, &c., in the kingdom, including the imports, at—

	Tons.	Value.
Poultry	14,000	£340,000
Eggs	75,000	3,000,000
Feathers	685	57,500
	89,685	£3,397,500

His estimate of the average annual sales of poultry in the two principal City markets of London is as follows:—

	Leadenhall.	Newgate.	Total.
Fowls, dead	1,266,000	490,000	1,756,000
Fowls, alive	45,000	15,000	60,000
Geese, dead	888,000	114,000	1,002,000
Ducks, dead	235,000	148,000	383,000
Ducks, alive	20,000	20,000	40,000
Turkeys, dead	69,000	55,000	124,000
	2,523,000	842,000	3,365,000

The aggregate number of eggs consumed as food in the United Kingdom it is impossible to state with any degree of accuracy, but it may be roughly computed at 2,500,000,000. In the last agricultural statistics of Scotland, poultry were not returned, and therefore we have no data upon which to estimate either numbers, produce, or value of the poultry-yards in Scotland.

We have imported from various countries, in the last seven or eight years, the following quantities of eggs:—

	Number.
1848	88,012,585
1849	97,745,849
1850	105,689,060
1851	115,526,246
1852	108,281,233
1853	123,450,678
1854	121,966,226
1855	100,005,200
1856	68,062,600

(First 6 months.)

In the eight years ending with 1847, the number of eggs imported annually ranged from 96,000,000 in 1840 to 77,500,000 in 1847. The annual quantity now imported is nearly twice as large.

The value of the poultry imported in the first six months of the present year was £15,674, against about £18,000 in the corresponding six months of last year. The number of eggs were nearly 14,000,000 in excess of the number received in the first six months of 1855, but not so large as in 1854. In the metropolis, the egg trade is a very important branch of commerce, giving employment to sixty egg merchants and salesmen on a large scale, exclusive of the number of shopkeepers who sell eggs. These salesmen distribute the boxes of eggs over the various consuming localities in light carts.

The imports of eggs in 1854 and the quarters from whence we received them were as follows:—

	Number.
Belgium	10,415,517
France	104,126,918
Portugal	419,806
Spain	5,983,161
Channel Islands	794,400
Other parts	226,424
Total	121,966,226

Up to the 8th August, 1854, eggs were entered by number; but since that they have been entered by cubic feet, internal measurement. In order to reduce the whole to a uniform standard, 200 eggs are estimated to be packed in one cubic foot. The computed real value of the eggs imported, at 4s. 6d. per long hundred (120), is about £18,005. The duty charged is 8d. per cubic foot of eggs from foreign countries, and half that duty from British possessions.

From 1835 to 1846 the annual value of eggs exported from Belgium was only about 170,000 francs; but in 1847 it began to increase rapidly, and in 1852 amounted to 800,000 francs; in 1853, to 1,200,000 francs; and in 1854, to 1,450,000 francs.

The number of eggs shipped to this country alone from Belgium has been as follows:—In 1850, 7,966,417; in 1851, 5,720,142; in 1852, 4,599,604; in 1853, 6,741,026; in 1854, 10,402,407.

The value of the poultry and game we receive from Belgium averages £21,000. In 1854, it was about £25,000.

Quantities of Portuguese eggs are occasionally imported into England by the Peninsular Mail steamers. The eggs of the Spanish fowls, being very large, are much esteemed, and valued at 1d. to 1½d. each. Spain imports a certain quantity from the French province of Oran in Algeria. The eggs of the Bedouin fowls are sold in the European markets at 5d. to 6d. the dozen.

Although we have not the latest returns of stock before us from Ireland, the quantity of poultry kept was returned as follows a few years ago:—Number of head of poultry in 1847, 5,691,055; in 1850, 6,945,146; in 1851, 7,470,654; in 1852, 8,175,904.

The supplies of eggs sent from Ireland to Liverpool, and thence into the manufacturing districts, are enormous, frequently exceeding one million a day. They are packed with straw in crates, boxes, or hampers. The crates contain from 6,000 to 8,000 eggs, the boxes about 2,500. Sometimes large boxes contain 13,000 or more eggs.

According to the Customs Bills of Entry, the eggs imported into Liverpool from Ireland in 1852 were as follows, in weight equal to 9,260 tons:—

	Packages.	No. of Eggs.
Dublin	20,995	69,280,000
Drogheda	4,019	15,536,000
Dundalk	1,896	14,774,000
Sligo	1,285	10,272,000
Cork	1,272	10,176,000
Londonderry	1,272	10,176,000
Newry	1,273	9,664,000
Waterford	649	4,736,000
Belfast	669	3,360,000
Ballina	20	160,000
	33,350	148,134,000

Ireland produces at least five times this amount of eggs.

A great increase in the trade in eggs from Londonderry to the Clyde seems to have taken place within the last few years. About 2,000 tons of eggs were imported in two months this year, and chiefly sold in the Glasgow markets. Assuming that there are 22,400 eggs in each ton, this would be a sale of 44,800,000 eggs in sixty days. Taking the population of Glasgow at 400,000, and supposing them all locally disposed of, this would give about two eggs daily to each person, but large numbers were doubtless forwarded to other districts.

According to M. Legrand, a French statistical writer, the whole number of eggs exported from France in 1835 was 577,000,000. The consumption in Paris, he stated at 138 eggs per head; while that of the provinces was fully double this rate, as in some parts of the country, junkets, omelets, and dishes composed of eggs and milk form the principal items at all the meals. "The consumption of eggs for the whole kingdom," he observes, "is estimated at 7,231,160,000; add to this number those exported, and those necessary for reproduction, and it will result that 7,380,925,000 eggs were laid in France during the year 1835."

Twenty years have amazingly increased the production and consumption of eggs, which have kept pace with the increase of population and wealth and the increased exports to England and the surrounding countries.

M. Armand Husson, in his interesting book on the "Consommation" of Paris, just published, returns the number of eggs consumed in the French metropolis at 175,000,000, or 175 to each head of the population, worth about 6s. The value of the eggs consumed in Paris in 1835 was 5,121,009 francs, or about 4s. 6d. per head of the population. The value of the poultry consumed in Paris in 1840 was £300,000. The value of the eggs consumed in Paris last year would be also about £300,000; but probably three-quarters of a million sterling would be a nearer estimate of the poultry and eggs consumed annually in Paris. The quantity of eggs sold in the principal markets of that city, according to the Octroi returns, far exceeds our entire imports.

The consumption and prices may be judged of from the following figures:—

	Number.	Average Price per 1,000.
1847	120,940,724	57 francs.
1848	106,747,222	48f. 40 cents.
1849	113,587,732	46f. 70 „
1850	124,597,150	43f. 98 „
1851	129,732,299	42f. 69 „
1852	160,000,000	41f. 35 „
1855	175,000,000	

In 1854 we imported from France 104,126,918 eggs; the average number received in the four years ending with 1854 from France, was 105,500,000. From her Algerian colonies, France received in 1853 1,123,630 kilogrammes of eggs, valued at rather more than a million of francs.

Steamboats and railways have done much to increase and improve the trade in poultry and eggs, in butter and milk, as well as in carcass meat and fish of all kinds, for the supply of large cities and dense populations in Europe and America, situate far from the chief seats of production or fishing. The poultry dealers of New York made their appearance on the shores of the great American lakes within a few days after the regular trains were in motion on the Erie Railroad. Poultry and eggs were swept away by them at an advance of 25 to 30 per cent. on their ordinary value, and a decided stimulus has been given to the rearing of poultry and eggs.

The British American provinces are now supplying the United States towns with eggs, which are imported, duty free, under the Reciprocity Treaty. Twelve hundred and sixty dozen eggs from Nova Scotia were entered very recently at the Custom-house, Boston, in one day. In the season of 1852, about 8,000 barrels of eggs, containing 84 dozen per barrel, were shipped from the port of Montreal to the United States, and sold at about 8d. the dozen.

According to the official American census of 1840, the value of the poultry in the United States was returned at nearly £2,250,000; it is now probably more than £5,000,000 sterling. The value of the poultry kept in the State of New York alone is about £600,000. It is estimated, from satisfactory returns, that the city of New York expends two million dollars in the purchase of eggs. One dealer in the egg trade at Philadelphia sends to the New York market daily nearly 100 barrels of eggs. There are no reliable statistics for the other large American cities; but it is highly probable that in such towns as Baltimore, Philadelphia, Charleston, New Orleans, Cincinnati, Rochester, &c., the poultry trade may be counted by millions of dollars for each. The American Commissioner of Patents estimated the value of the poultry and their products, in the United States, in 1848, as follows:—

Poultry	11,680,512 dollars.
Eggs..................................	5,431,500 „
Live geese feathers	1,000,000 „
	18,112,012 dollars.
	= £3,622,403.

In 1855, the value of the poultry alone was estimated at £4,000,000. The amount of sales of eggs in and around Quincy Market, the principal place of sale in Boston, for 1848, was 1,129,735 dozen, which, at 9d. the dozen, the average price then, makes the amount thus paid for eggs £42,365; while, from information obtained from other egg merchants in the same city, the total sales for 1848 amounted in value to upwards of £200,000. The average consumption of eggs at three of the Boston hotels was more than 200 dozen each day, for the year 1848. Although, in the United States animal food is generally the principal aliment, if but one-half the number of eggs consumed by a resident of Paris be allowed to each citizen of New York, it would require 69 eggs for each inhabitant, or fifty-one and three-quarter millions of eggs annually for New York, exclusive of Brooklyn, Williamsburgh, and other suburban localities of the Empire State, with a further population of 200,000, bringing up the total population to nearly one million souls.

But at this ratio of consumption, what quantity of eggs would be required for our metropolitan population of 2,500,000 in London? Nearly 173,000,000 eggs. Probably fully this amount is consumed; and at one halfpenny each (a very moderate price), this gives a money value of £360,416 for London alone. Mr. Poole's estimate of the total consumption in the United Kingdom, 75,000 tons, at say 22,400 eggs to the ton, would give 1,680,000,000 eggs. His value of £3,000,000 for these is too low. They certainly may be taken at the price of 6d. the dozen—for they are never obtainable by retail lower—and this would give us an aggregate value of £3,500,000.

I cannot go into a detailed description here of the several varieties of poultry, ranging from the pert little Bantam of one pound to the gigantic Shanghai of a dozen or more pounds, with its awkward uncouth form, enormous bones, and comparatively small amount of flesh; nor into the inquiry as to the profits derived from rearing ducks, geese, and turkeys. I may mention, however, as a fact worth noticing, that in Brittany they have a plan of salting well-fatted ducks, and when the flesh has been about a fortnight in a tub of salt with bay leaves and saltpetre, and has acquired a fine red colour, the bird is cut into four quarters, larded with cloves, and put into a pot with some spice, for future use.

A Leicester poultry-breeder thus sums up the objections to the Cochin Chinas, which were recently so popular:—

"They are neither useful, profitable, nor ornamental. Not useful, because they do not come early to maturity; and as fat chickens they will not bear a comparison with the Dorking, which are sent to market at two months old: when full-grown, though capable of being made very fat, they are inferior in delicacy and flavour to every other breed. Not profitable, because they will neither get fat nor lay a larger number of eggs without expensive keeping, for they are great eaters, and have no idea of catering for themselves; when allowed their liberty and a good range, they will not avail themselves of it, but will remain poking about home, which may be accounted for by their coming from a warmer climate. Not ornamental: this may be a matter of taste; but, for my part, I cannot like these great awkward gawky birds, with a crow as hoarse and discordant as a raven's cry, with plumage not gaudy, but blotched with red and yellow."

They are recommended as extraordinary layers, occasionally laying two a day, and their eggs being very rich. It must be remembered, however, that they will not do this unless very highly fed; or, in other words, if you lay out eighteenpence in food, they will produce you a shilling's worth of eggs.

In Malay, Siam, Cochin China, and the Eastern countries generally, where food is plentiful and cheap, they thrive well, because they require little care. Fed on rice they will fatten to an inch thick on the breast. A large trade is carried on with Singapore, Penang, and other localities, where poultry are often supplied at 30s. to 40s. the hundred; geese at 2s. each, and ducks at 8d. or 9d. each. Mr. Fisher Hobbs, who has given some attention to the breeding of poultry (as well as pigs, for which he has so high a reputation), thus expresses himself on the result of his experience:—

"He had tried all kinds, and had come to the conclusion that there was no breed of fowls so fit for common farm premises, and which the farmer could call his stock, as the Dorking. He believed it was the best bird to place in the farmer's hands as domestic poultry. No doubt the Cochins had certain properties; they were good breeders, and produced eggs at a very early period of the year. For that purpose they were good; but when they came to consider the great amount of food they consumed, and the inferior quality of their flesh, he believed, for general purposes, they would not equal the Dorkings. There were other breeds beneficial for certain localities and certain purposes. He thought the Spanish was a nice bird for a gentleman in a town or inn-yard, as it required warmth, and would produce a great number of eggs. It grew very slowly; but, when it came to maturity, was a nice bird upon the table."

The great secret of success in the profitable management of poultry is due attention to their food, housing, and cleanliness. I am not writing a treatise on the rearing of poultry, for of these there are several very excellent ones extant. Besides lime or pounded oyster-shells, sand, or ashes, and a copious supply of water, domestic fowls require a large amount of animal food, to make them prolific layers. To this, great attention is paid in France. Mons. de Sora, a large fowl breeder in the neighbourhood of Paris, is reported to buy the used-up hacks of the French metropolis for feeding his hens, and he thus obtains eggs every day in the year. This is no great recommendation of French eggs, and is almost as revolting to the delicate stomach as a musty or addled egg. But the chemical elaborations of nature are so manifold, that we scarcely know what have been the constituent elements of much of the food we consume; and the sausage and brawn makers, the preserved-provision vendors, and other preparers of animal food, keep us pretty much in the dark as to the special character of their commodities. Indeed, the French have recently been trying to force horse-flesh again into the category of butcher-meat. M. St. Hilaire, M. Renault, and other eminent Frenchmen, assert that the horse, besides his ordinary services to man, can also be made to supply cheap and nutritious food; and even old worn-out hacks will, they say, furnish a superior *bouillon*, a good and very eatable *bouille*, and exquisite *roti*, and a delectable fillet. Such hardy gourmands, enraptured with tough horse-flesh, will ere long be loath to admit poultry as sharers in the feast. M. de Sora's poultry-yards furnish about 40,000 dozen of eggs a week, at the rate of six dozen for 4 francs, yielding the proprietor a very handsome revenue. He employs about a hundred persons, mostly females. He never allows a hen to sit, and all his chickens are hatched by steam. The eggs are arranged upon shelves and covered with blankets, and each morning a swarm of chickens are taken to the nursery.

The Chinese have vast establishments at Shanghai for the hatching of poultry by artificial heat. The process adopted is a simple but efficacious one, and the heat employed is not very great, as the thermometer seldom exceeds 93 degrees. At the principal establishment, the proprietor (according to Mr. Sirr's work) affirms that he frequently hatches 5,000 eggs per diem. This may be true or untrue; all we know is, that great quantities of eggs are thus hatched. Neither in England nor America, however, have artificial hatching-machines been found to succeed practically.

Although smaller in size, and not equal to a new-laid egg, the French eggs arrive in pretty good condition, and, if sold off quickly, are well adapted for culinary purposes. Few, however, are wasted; and even when not very fresh, they are sold for frying fish, and to the lower class of confectioners for pastry.

There is no difficulty whatever in testing eggs. Take them into a room moderately dark, and hold them between the eye and a candle or lamp. If the egg be good—that is, if the albumen is still unaffected—the light will shine through with a reddish glow; while, if affected, it will be opaque or dark. A very few trials will show any one the ease and simplicity of this method.

In Fulton and Washington market, New York, a man may be seen testing eggs at almost any time of the year. He has a tallow candle placed under a counter or desk, and taking up the eggs three in each hand, passes them rapidly before the candle, and deposits them in another box. His practised eye quickly perceives the least want of clearness in the eggs, and suspicious ones are re-examined and thrown away or passed into a "doubtful" box. The process is so rapid, that eggs are inspected perfectly at the rate of 100 to 200 per minute, or as fast as they can be shifted from one box to another, six at a time.

Salted duck-eggs are an article in great demand in some parts of the East, chiefly by junks. The Malays salt them as they do their meat; but the Chinese mix a red unctuous earth with the brine, which no doubt stops the pores of the shell and preserves them better. They are put into this mixture at night, and taken out during the day to be dried in the sun, which is, in fact, a half-roasting process in a tropical climate.

Pickled eggs, while they constitute a somewhat novel feature in the catalogue of condiments, are at the same time particularly relishing. When eggs are plentiful, farmers' wives in some localities take four to six dozen of such as are newly laid, and boil them hard; then divesting them of the shells, they place them in large-mouthed earthen jars, and pour upon them scalded vinegar, well seasoned with whole pepper, all-spice, ginger, and a few cloves of garlic. When the pickle is cold, the jars are closed, and the eggs are fit for use in a month afterwards. Eggs thus treated are held in high esteem by all the farmhouse epicures.

An article called condensed egg is now sold in the shops. It consists of the whole substance of the fresh uncooked egg very delicately and finely granulated by patent processes, after the watery particles, which the egg naturally contains, have been completely exhausted and withdrawn, without further alteration of its properties. It contains all the nutritious properties of the egg in its natural state, and must be valuable to shipowners, emigrants, and others. One ounce of it is said to be equal to three eggs.

Eggs form an item of consumption in some manufactures. Much of the softness of good kid leather for gloves and shoes is said to arise from the use of the yolk of eggs. One leather factory in Bermondsey uses 70,000 or 80,000 eggs a year for this purpose. The yolk of eggs is mixed with alum, salt, and flour in a barrel; and the skins, in one process of the manufacture, are agitated for some time with the mixture. The eggs are obtained from France in the spring, and are kept good throughout the year in brine water. The white of eggs—which is pure albumen—when properly dried, enters into commerce for several purposes in the arts, &c. It is exported in this dry and horny state to the West Indies, to be used in desiccating cane-juice. It is also employed as a glaze, or species of varnish, by bookbinders, confectioners, &c., and as a clarifier for wines and syrups. It is used in photography, and by print manufacturers at Manchester and other districts. Latterly, however, a cheaper substitute has been found for albumen in the textile factories for the pigment work of the calico printer. The colours are required to be laid on the face of the goods in an insoluble condition, so as to give a full brilliant appearance. Recently, Mr. Pattison of Glasgow found a more economical substitute in milk, which is largely bought up from the farmers, and used as a vehicle for effecting this process of decoration. This insoluble matter, which the patentee terms lactarine, is obtained from butter-milk, at a price far below that of egg albumen. The late Professor Johnston, in his admirable work on *The Chemistry of Common Life*, gives us a clear analysis of the composition of the egg. Hence we learn that the carbonate of lime of the shell is one-tenth of its weight, the white six-tenths, and the yolk three-tenths. In drying for albumen the egg will lose three-fourths of its weight by the evaporation of the watery particles. In the dried state the albumen is in the proportion of 55 per cent; the fat, 40 per cent.; and the ash, when burnt, 5 per cent.

In our consideration of poultry profits we must not omit feathers. White and gray goose feathers have long been used as a soft and elastic material for filling beds, cushions, and pillows. Poultry feathers, from turkeys, ducks, and fowls, although less valuable, have their commercial use. It is to be regretted, for the sake of health, that feather beds are not oftener ventilated or the feathers dried. The value of the foreign feathers we import has risen from £4,237 in 1847, to nearly £33,000 in 1854. The feathers of poultry for beds, imported in 1854, amounted to 273 tons, valued, at the average price of £7 per cwt., at £32,846.

The countries from whence we receive our supplies of feathers are as follows:—

	1853.	1854.
	Cwts.	Cwts.
Russia	3,306	241
Prussia	—	984
Hanse Towns	3,636	1,549
Holland	689	1,203
France	545	1,215
Other parts	400	272
	8,576	5,464

These feathers have been for many years imported duty free.

We also imported, in 1854, upwards of 12 millions and a-half of goose and swan quills, valued at £10,282; the goose quills being worth 15s. to £2 the thousand, and the swan quills £3 to £5 the thousand.

Large quantities of feathers are brought down to New Orleans by the Mississippi river from the interior farms. Sometimes these amount to 3,500 bags in the year, as in 1850. In the last two years only about half this quantity was received. The 1,377 bags of feathers in 1855 were valued at £10 the bag, making £13,770 for feathers. In countries where much poultry is reared—for instance, geese in Alsace—the quills are employed as manure. On one Magdeburg acre of land, nine to ten sacks, of about 500lbs. each, are used. Feathers contain the same substance as horn, and consequently possess the same powerful fertilising qualities. In this country neither feathers nor fowl's dung can be obtained in sufficient quantity to be taken into much consideration as manure.

Averaging the value of the eggs, poultry, and feathers, &c. we receive from foreign countries, it is equal to nearly £400,000 per annum; and there is no reason why all these, by proper attention, should not be produced in the kingdom.

The figures and calculations I have given may be taken as approximating closely to the truth, and are sufficient to prove that there is an extensive field open for industry and application in various parts of the kingdom in poultry-breeding. That this department of rural economy is capable of extension far beyond its present limit, and may be exerted to a wide and profitable range, increasing wealth without any appreciable increase of cost, is self-evident; and whether conducted on a large or a small scale, the profits are considerable, and the risk and trouble comparatively small.

THE LORD OF REAPERS.[*]

The "lord" of the reapers goes forth in the morn
With bright and keen sickle to cut down the corn;
So stalwart, so ruddy, so noble is he:
He's a true-born Briton if ever there be.

The "lord" of the reapers is up with the sun;
Old Sol, too, goes down ere his day's work is done;
He works and he whistles, or sings in high glee,
For none is more care-free or happy than he.

The "lord" of the reapers, he leads on his men;
With his fine mellow voice he so cheers them again;
With thew and with sinew so workish they go,
And acre by acre the gold grain lay low.

The "lord" and his men love October good ale;
With brown bread and fat bacon at noon they regale;
The laugh and the jest and the drink all go round;
Search all the world o'er, none so merry are found.

Then the "queen" of the "binders," aye, look in her face,
Though nutbrown and sunburnt, what beauty we trace!
God bless her bright eyes and her innocent smile;
All the saints in creation she'd surely beguile.

Hist! the "lord" and the "lady" have three times been
asked:
Next Sunday the "parson" will bind them quite fast.
May God give his blessings of plenty and health,
To rear up good children—far better than wealth.

May their sons and their daughters in honesty grow,
And in good time assist the gold grain to lay low;
In unity thrive, fondly loving each other,
Their thoughts always bent to please father and mother.

When "my lord" and "my lady" in old age will be grey;
When home to God's acre they calm glide away;
Though their bodies repose 'neath the village green sod,
May their souls live for ever in the homestead of God.

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[*] The head reaper is in some districts called "captain" or "lord:" I choose the latter designation. There is generally some village maiden selected as "queen" or "lady." The binders, I must inform the uninitiated, are they who tie the corn into sheaves. Old usages like the above are fast dying out. When the writer, now 76 years of age, was a "bird starver," many old customs were extant.

THE BARLEY TRADE.

Sir,—The present state of the corn market, in respect to the price of barley, is exciting the surprise of those who are acquainted with the circumstances of the late crop, both in respect to the breadth sown, the produce per acre, and the damage sustained by it from the unfavourable weather both before and after it was cut. It is true that the average price of barley is about two-thirds of that of wheat, and that the present average fully comes up to that standard, as may be seen by a reference to your journal of this week. But this is an exceptional year, in which the supposed proportions of production between wheat and barley have not been maintained, a large breadth of land which ought to have been sown with the latter having been appropriated to the former grain. This has been the case throughout the United Kingdom, in almost every district, as is proved by the official returns for Ireland and Scotland, and by the private information received by yourself and others from all parts of England, as given in a schedule, in your journal of last month. To the consideration of the crop, therefore, and of the probable future state of the trade, I now beg the attention of your readers.

Let me, however, first state what, in fact, is well known to the trade—that, previous to the late harvest, the stock of barley was completely exhausted ; so much so, indeed, that, although the malting season was not in, the price of barley was kept up. This was caused by the large demand that sprang up in France for that grain, for distilling purposes, in consequence of the previous failure of the grape-crop, which caused a deficiency in the produce of brandy. There was also a considerable consumption of barley in the winter and spring, for feeding cattle, which cleared out the stocks of inferior barley. It was, therefore, necessary to commence at once upon the new crop, for all purposes for which that grain is used.

In looking over the official statistics for Scotland and Ireland, I find that the decrease in breadth of land sown with barley last spring was, in the former case, one-seventh that of the previous year, and amounting to 20,479 acres ; whilst in Ireland the deficiency was one-fourth, or 49,438 acres. In England, unfortunately, we have no official statistics to refer to, and we must therefore make the best estimate our private materials afford us. From your schedule just referred to, and from the information I have received from different parts of the kingdom, and also from a pretty extensive personal observation chiefly in the barley counties, I am led to the conclusion that there was at least one-sixth less barley sown last spring than the usual average, taking the United Kingdom throughout. Now, on the supposition that the average breadth of land sown with barley is equal to one-half that sown with wheat ; and taking the latter at 4,500,000 acres, we shall have an average quantity of 2,250,000 acres of barley, the decrease on which last season, being one-sixth, amounts to 375,000 acres.

With respect to the late crop, I believe that on the light lands it was a full average one ; but that on the heavy lands it was very deficient both in quantity and quality. On such soils the barley was generally laid, which greatly injures the quality of the grain if it occurs, as it did the last season, at an early period of its growth. Taking therefore the average produce of barley at five quarters per acre, and allowing one-tenth as the deficiency in the general crop, we come to the following results :—

Average breadth of barley	2,250.000 acres.
Decrease last season one-sixth ..	375,000 „
Breadth sown	1,875,000 „
Multiply by produce per acre ..	4½ qrs.
	7,500,000
	937,500
Total produce	8,437,500 qrs.

and the produce-account stands as follows :—

		Qrs.
The average breadth of 2,250,000 acres, at 5 qrs. per acre		11,250,000
Deduct for deficiency in breadth one-sixth, or 375,000 acres, at 5 qrs. per acre	1,875,000	
Ditto for deficiency in yield 1,875,000 acres, at ½ qr. per acre	937,500	2,812,500
Total produce ..		8,437,500

With respect to the quality and condition of the late crop, I reckon there is but one opinion respecting it, namely, that a very small proportion of it will be found fit for malting. Not only was great injury sustained by being lodged at an early period of its growth, by which the sample would necessarily be rendered thin and light, but the wet weather during the harvest caused still greater damage by sprouting, both of that which was cut and what was uncut but laid. To such an extent was this the case that few samples will be found that have not sprouted barley amongst them. I therefore consider that the proportion of good malting barley will prove smaller this season than has been produced for a great number of years.

Under these circumstances I cannot believe that the usual proportion in price between wheat and barley can be maintained after the malting season has fairly set in, and the demand come on. I am aware that the money market will have great influence on the corn trade generally, and that the extreme tightness in Lombard-street will check speculation, and confine purchases to the immediate wants of the buyer. But I also know that demand and supply are paramount to all other agencies in the regulation of prices ; and if there be a great deficiency in the latter, in the barley trade, as I confidently expect there will be, the stringent state of the money market will not prevent an advance; nor will the price be regulated or controlled, as in ordinary years, by that of wheat.

I am quite aware that the estimate I have here given of the barley crop is hypothetical, there being absolutely no data to guide us as to the actual breadth of land sown with either barley or wheat in England. In speaking of the proportion of the deficiency in the breadth of land sown last season, I am less at a loss, the statistics for Ireland and Scotland being a guide, to a certain extent, corroborated by the private accounts from the several districts of the country. I believe that I have under rather than over stated that proportion, and that in many districts little more than two-thirds of the turnip land was sown with barley. This, however, would be disputed by many persons; and I have, therefore, set the deficiency down at one-sixth, as being the lowest estimate I have yet heard spoken of.

With respect to the importation of foreign barley, I apprehend it will not go far in supplying the deficiency in the home crop of malting qualities. During the nine months up to the 30th September, the quantity of barley imported amounted to 354,563 qrs., of which I believe very little remains on hand beyond the recent importations. We shall, doubtless, have a good deal from the Baltic ports, and the English maltsters will be probably compelled to use some of this, which in ordinary years they would not look at. But, if the demand for malt for the colonies continue as good as it was last season, the imports will go but a little way in supplying that demand. I have made no estimate of the quantity of malting barley damaged by the rain during harvest, and rendered unfit for that purpose, there being no possibility of making even a guess at it. It is, however, stated on all hands to be considerable, and must soon tell powerfully upon the supply for the maltster.

Yours truly,

London, Oct. 29. S. C.

USEFUL HINTS UPON HARVESTING ROOT CROPS.

The period having again returned for harvesting the various root crops, a few hints or suggestions may be of use to some of our young farmers.

Potatoes.—As this crop will for the most part be harvested before the appearance of this paper, I shall say but little upon it. I regret to find that the old mysterious disease prevails almost universally, and in some districts to a fearful extent. The diseased part of the crop should by no means be graved with the good parts, nor should any dirt be allowed to remain. The bad ones should be separated from the good ones as they are taken up; these should also be riddled, and any bad ones still remaining taken out. The riddling will make them clean, and free them from adhering soil, which will leave them in a proper state for the final covering. This should be done immediately, and it may now with safety be sufficiently thick to secure them from all hazard from frosts, and they may be left without ventilation.

Mangel Wurzel.—Every judicious farmer is now engaged in taking up his mangel wurzel crop. The season is all that can be desired for this laborious business, and the crop is a very large one. I venture to say that the following suggestions for securing this crop has many advantages, and ought not to be neglected. The crop is ready for harvesting when the under-leaves generally are turning yellow. The tops, if not fed off, should all be twisted off, not cut. The day previous to carting, just so many as may be requisite for the next day's carting should be twisted off. This is done by the person taking hold of the tops immediately above the root, and pressing them downwards, giving at the same time a sudden twist: they are thus easily snapped off. A quantity of watery juice exudes from the stumps, which will generally cease in a few hours: they will then be in their best condition for harvesting. It is decidedly wrong to cut the tops off: it will cause fermentation in the grave, and many will rot. It is improper to cart them immediately after stripping off the tops, but it is often done without great loss. It is best, however, to allow time for the running juices to dry up. The tops should be carted, as quickly as convenient, to the breeding ewes or other store stock. If the soil is sufficiently loose to permit the roots to be taken up without cutting the tap-root, it is by far the most preferable mode to draw them up by hand—no fork, no pick, must be used. The root ought to go to the grave uninjured; if so, no fermentation, or but very little, will take place; and should the farmer succeed in securing them so safely by covering that no frost can penetrate into the grave, he may sanguinely anticipate a well-preserved crop of excellent quality. I prefer a grave eight or nine feet bottom, slanting up to nothing at five feet in height. The roots if properly packed will shoot off the rain; but it is always right to thatch the day's work down every night. I have plenty of soil wherewith to cover them, and have no difficulty in that respect. The graves are left two or three weeks under this thin covering of thatch only, in order to let out any fermenting tendency: they are then covered with earth about fifteen inches thick to within a foot of the top, which is left open till threatening frosts give indication that they will be no longer safe. They then are fully covered thickly down. In districts having stony subsoils near the surface, root-houses are requisite, or a covering of stubble two or three feet thick and well-trodden down will do very well. It is certain loss to grave this crop in a frozen state, or immediately after thawing: they must have time for the root to recover its healthy state again. As the warmth of spring puts in, a portion of the covering must be taken off: the roots commence growing in the grave—this causes fermentation, unless air is let in; and often before notice is taken the grave is seriously damaged. This must be borne in mind.

Swedish Turnips.—The same process of harvesting the Swedish turnip crop should be adopted as for mangel wurzel. It is much more liable to fermentation in the grave, and therefore greater care should be used throughout every stage of its management. The great cause of fermentation is the cuts, stabs, and bruises sustained by the roots in the course of carting and getting up. They cannot be readily pulled up by hand; therefore the pick or the ploughshare is resorted to, to loosen their hold—either will cut the tap-roots, and thus cause exudation, and from thence fermentation. The slightest fermentation is very injurious, as it takes away much of the fattening property of the turnip. The larger the grave, the more danger from this cause. I prefer making a series of small graves all over the field. This is done by simply throwing the turnips in from the surrounding rows, rounding them up, and covering them with soil. This is very convenient for cutting for stock, and gives every part of the field equal benefit from the deposit of manure during the feeding-off.

Common Turnips.—These may be carted up, but only for immediate use; they will not profitably bear a heavy covering. A good thatching with straw or stubble is desirable to keep them dry, and prevent exposure to weather.

Carrot Crop.—The harvesting of the carrot crop is a tedious process; all have to be dug up, topped, and then carried to the grave. Great care should be taken not to cut or prick them in digging, or to bruise them in carting; great loss is often sustained from inattention to these particulars. It is a very valuable crop, if well got, and properly secured. It should meet with much greater nicety in the management than any other root-crop. It is not very liable to fermentation in grave; but the smallest bruise will cause partial rotting. Every care should be taken in the graving. The graves should remain some time under a thin coat of thatch, prior to their final covering, as named for mangel, &c., &c.; and the same care will be required in the spring.

We have so frequently called attention to suggestions similar to these, that we deem an apology due to our general readers for again recurring to them. These crops, however, are becoming so important in agricultural produce, that they well-nigh claim equal care and attention with the corn harvest. The immense quantities produced in the district from which we write causes great interest in harvesting them. The advanced season, and the fear of being caught by early frosts, lead every grower to make great efforts to secure them. Hence, labour at this season is generally very scarce and dear. At the present time, it is unusually so: good farm-labourers at some employments are receiving from 3s. to 3s. 6d. per day. The general average is about 2s. 6d. per day. We are anxiously looking forward to the introduction of steam cultivation. In this district it is much required. All the thrashing is effected by steam-power; and although it has set at liberty very many horses for general farm purposes, still the demand for them is greater than ever. Talk of improvements in farming! Only contrive the means for successful cultivation in the autumn; and far more culture will be achieved at this season than has of late years been done, although it is all-but universal. Quite as much labour and management is bestowed upon the land now, as can be spared to apply to it. Steam culture is just now the great desideratum in agriculture.

AGRICULTURAL INNOVATIONS.

GRAIN DRYING IN THE BULK.

"Last week," says the *Lincoln Mercury*, "a farmer at Ryehall was seen carrying wheat from his field to his dwelling, carrying a sheaf under each arm. The circumstance was observed by a neighbour, who proceeded to the farm-house, where he saw a large fire, and the farmer's wife engaged in drying the sheaves before it. We are informed that corn, the produce of three acres of land, was dried in this *novel* manner." So much for the march of improvement! Valuable as no doubt the farmer would find the principle, the mode of carrying it into practice must strike us for its innocent simplicity—it carries us far back into remote times, ages beyond machinery. But the farmer, nevertheless, has got hold of a right thing, and its value may yet show him the right way to do it. Slow and tedious as the process would be, it was infinitely better than watching the sheaves in the field soaking in the rain. There was wisdom in the one, folly only in the other mode of proceeding.

Take the method above described, and that which we have noticed as the invention of Mr. Saunders, and you have got pretty nearly the two extremes of the system —in its first dawn, and in its more matured perfection. It may serve some useful purpose to give further details of Mr. Saunders' invention, and first as to the chamber in which the drying process is carried on. "I form," says the patentee, "a rectangular chamber of wood or other material, having a floor perforated all over with numerous holes, and below this floor, either by flues, steam or hot-water pipes, or otherwise, I cause the air to be heated to about 100° to 120° of Fahrenheit, taking care that free ingress of air is insured below the floor; or I heat the air by forcing it by suitable blowing apparatus through heated pipes, or against other suitable heated surfaces, into the space below the floor, in such a manner as to keep up a constant supply of warmed air below the floor, which will be divided by the perforated floor, and be distributed evenly in the chamber above. The size of the chamber may be varied; but a convenient size is six feet from side to side, 10 feet from the front to the back, and 12 feet high. * * The sides, back, and front of the chamber are closed in all parts, except where the grain or other crop passes into and out of the chamber, and the upper part of the chamber has a flue or passage opening into the atmosphere; but it is preferred, in order to ensure a constant ventilation and passage away of the air and moisture, to have a fan or other exhausting apparatus in connection with the upper part of the chamber, so as to be enabled, when the outer atmosphere is heavy, or the moisture and air do not pass away freely from the chamber, to aid the ventilation upward by such a means."

It is obvious that by the mechanism we have thus described, a wide range of control over the drying material is obtained. No longer, as in the first arrangement we described, is it lying on racks unequally distributed; but we have it now in the position best calculated to dry it quickly and completely. We can also pass it through in thin layers, exposing as much of its surface as possible to the action of the heated air; and by quickening or making slower the speed of the rollers, we can keep it under this influence as long or short a period as desirable.

In the newspaper paragraph we have just quoted, we notice that the labour of bringing the corn from the field to the "fire-side" was performed in the most primitive of all methods; doubtless the happy thought of bringing it to the fire at all was a sudden one, and the emergency admitted of no attempts at a better or speedier method. But under ordinary circumstances the same excuse does not hold, and we see no reason why mechanism should not be had to expedite the process of removal of the corn from the field, and through its various stages of after-processes. We have often wondered at the prudence and forethought which could abridge the labour of cultural processes, and lessen the toil of human labour, by the introduction of mechanism of various kinds, and yet be satisfied with the tardy modes in use, of filling the harvest cart and building the stack, and this at a time when delays are doubly dangerous. It is gratifying, however, to find that the attention of practical men is being attracted to this hitherto neglected department. One evidence of this is in the very ingenious machine invented by Mr. James Hayes, of Elton, in the county of Huntingdon, and described in his patent of the 3rd of June, 1853 (No. 1,369). "The object of the invention," says the patentee, "is by the employment or application of mechanical contrivances to diminish to a very considerable extent the manual labour heretofore required for stacking agricultural produce." The machinery by which this is effected "consists principally of an endless chain or band of any convenient length, and to which are affixed, at suitable distances, prongs, teeth, or tines, on which the straw or other agricultural produce is laid by the attendants. This endless band or chain is adapted to a moveable frame, which is mounted on a centre or fulcrum below, and is supported from behind by a toothed rack; so that by means of a pinion, or other suitable gearing, the moveable frame and endless band may be raised to any required altitude by altering the angle. Rotary motion is communicated to the endless band by means of suitable gearing, which may be actuated either by hand labour or steam power. The whole apparatus is mounted on wheels, for the convenience of removal from place to place." As the succeeding layers of corn increase in height, either on the waggon or the stack in which they are piled, the height of the upper or delivering end of the endless band will have to be correspondingly altered. This is effected by raising the frame to which it is connected by means of the quadrantal rack."

It is evident that this principle may be extended to mechanism for moving corn horizontally from point to point of a field, as to a portable thrashing machine, or a drying chamber, the prime mover used for these might easily be arranged to give motion to the endless band of cloth or chain on which the corn was placed. From the rapidity of the process, and the few hands which its use would entail, we are disposed to think that the simple mechanism required would soon repay the cost of its construction.

Having thus thrown out a few hints as to the plan of drying grain by artificial heat in chambers prepared for the purpose, it now remains for us to notice the method by which it can be dried by the ordinary atmospheric influences. From many of the points connected with drying being applicable to both plans, our remarks on this will necessarily be very brief.

It must be obvious that protection from rain must form an essential part of any plan. We have an instance of the power of the sun and the wind, in drying hay exposed in the open field; but we have also an instance of its uncertainty and cause of loss in rainy weather. This contingency must be guarded against. To allow of the air circulating freely amongst the corn, we must raise it from the ground; and to expose as much of its surface to the drying influences as possible, it must be opened out in thin layers. These three desiderata may be obtained by some such arrangement of open sheds as we notice in the bricklayer's or potter's field, or the tanner's yard, or by a similar arrangement of open and horizontal frames as used by glue-makers for drying their glue.

The application of the centrifugal drying machine, or "hydro-extractor," to the drying of corn has been recently suggested. This machine, which was invented by Mr. Seyrig many years since, is now largely used in various branches of our manufactures with marked success. Its principle is very simple. A circular receptacle with perforated periphery is made to revolve vertically, at an amazing speed, within an outer case. The goods to be dried (as calico, &c.) are enclosed in the interior vessel, and the machine put in rapid motion—some two or three thousand revolutions per minute. The centrifugal force generated has the tendency to scatter the material out of the case; but this being prevented, it is forced in close contact with the perforated sides, and the motion being continued, the moisture is rapidly withdrawn through the perforations, and lodged in the space between the inner and outer cases. The rotation of a very few minutes suffices to withdraw a large amount of moisture. In this machine we have obviously a power of a wide range for withdrawing a large percentage of the moisture in corn. How far, however, it is capable of *drying* to the full extent necessary remains to be seen; and it may be doubted whether it is capable of thoroughly and completely drying, and at the same time not injuring the grain. For grain very much wetted it is doubtless well adapted; for by it all superabundant moisture will be rapidly withdrawn, and the thorough drying may be effected by afterwards passing the grain through the artificially-heated chamber in the way we have already described. It would thus relieve the drying chamber of the heaviest portion of its duties, and leave it merely that of finishing the process; for we have no doubt that by the use of the "hydro-extractor" a larger quantity of superabundant moisture can be got rid of in a less space of time and at a less cost than could be done by the "drying chamber." Experiment, however, can only decide whether it can remove all *damp*, and give that degree of desiccation necessary. We have seen its operation in calico, and marvellous as was the rapidity with which the dripping material was rendered free from all apparent moisture, it still retained a degree of damp which would have been highly prejudicial to corn. Of course, this does not prove that it is incapable of thoroughly drying: it is possible that such a thorough drying of the calico was not required—not that it could not have been effected. Only it should be remembered that we have not often to deal with corn from which the water runs or drips off, and that a degree of damp which would give no external sign of its presence would still be very prejudicial to its quality. Corn must not only be surface but internally dry. How far this can be effected without the use of artificial (or sun) heat remains to be tested. A modification of the hydro-extractor for the purposes of corn-drying would be easily brought out—the principles of drying being duly considered. A thin layer of the grain as brought from the field, placed in contact with the periphery of the perforated case, would be deprived of its moisture much quicker than if the grain were placed in bulk completely filling the receptacle from its centre to circumference. For be it remembered, that the moisture from the grain in the centre would have to travel through all that portion lying between it and the sides of the case. Again, the drying action would decrease as the material approached the centre of revolution. These considerations would seemingly point to an arrangement in which the perforated case would have an interior one, giving a concentric compartment varying in depth according to the requirements of the material—to be decided by experiment—in which the grain would be placed in a vertical position with the ears upwards. A ring of grain would thus be formed, every stalk and ear of which would be placed under the most favourable circumstances to receive the drying action. The placing of sheaves of corn is evidently the worst form in which to submit it to the action of the machine. Whether this action would do something more than dry—namely, perform in some degree the part of a thrashing machine—remains to be seen.

Between the certain and speedy process of drying by special heating apparatus, and the action of the hydro-extractor, or the slower if not the less certain method of exposure to the open air, as also suggested, the farmer must choose. Any plan, however rude—carrying the grain under arm to our kitchen fire, or spreading it out on the top of the engine-boiler—is better than the "no plan" of allowing it to stand soaking in a heavy rain, we looking on the while very helplessly, taking no lesson from the din of the thrashing machine sounding in our ears, or the smoke from the farm-engine chimney—gladdening our eyes. The powers of mind which have brought these two helps to the aid of the farmer, will surely help him out of the difficulty which apparently environs him in the department which has furnished the theme of our present paper.

R. S. B.

ON MAKING BEER FROM MANGOLD-WURZEL.

Sir,—It will be in the recollection of many of your readers that, some years ago, I published a statement of the mode practised by me in brewing beer from Silesian beet, and which I carried out for several years afterwards, until the late high price of hops induced me to decline it; but the present low price of that production, and the high price of malt, have induced me again to resume the practice: and I therefore beg, through your columns, to submit the method pursued by me, which was previously published in a pamphlet, in 1852; but, as no copies now remain, I beg to refer the numerous inquirers who have written to me upon the subject, to your widely-circulated journal, for information.

The mangold-wurzel is inferior to the Silesian beet only so far as it contains a less proportion of sugar than is found in that root; and as the yellow varieties are now generally grown, I recommend them, in preference to the red varieties, for yielding a more delicately-flavoured beverage than the latter description of root will produce.

The mode pursued by me has been varied since I first commenced brewing; and a few general remarks will therefore be necessary, to enable persons fully to succeed. The proper season is November and February; and the beer should be kept at least from six to eight months before using, but it may be used as soon as it becomes sufficiently clear, and which will sometimes take place in a much shorter period of time. It may be kept until two years of age, and will still continue to improve; and if the cellarage is good, may be kept even to a much longer period. It is usually of the colour and flavour of London porter, and so closely imitates it, that persons who have thought themselves competent to distinguish one from the other, have been unable to do so, and have in several instances given the preference to that brewed from the mangold-wurzel; and, in addition, I also state that no disagreeable effects are produced upon the stomach by its use, but that in all respects it is equally wholesome with beer brewed from malt, provided it is kept sufficiently long for the saccharine matter to decompose, which goes on more slowly than when produced from the former description of malt.

I have brewed altogether about 50 hogsheads; and my labourers drank it for nearly three years without any complaint, except during the hay and harvest months; and then, as was afterwards proved, their complaining arose entirely from the prejudice they had imbibed against it, well knowing that at those times they could succeed in establishing their objection, especially as I then had commenced using it too early after brewing.

With malt at 80s. per qr., and hops at 8d. per lb., the difference in the cost of beer, as brewed from malt and hops, and as brewed from the mangold-wurzel, is as four to one. A hogshead of beer from barley-malt, at the rate of 3 bushels to the hogshead, will now cost 32s.; whilst a hogshead brewed from mangold-wurzel will cost about 8s.; but as no grains are produced from the latter, to meet the expense of brewing, I assume 10s. as the full cost per hogshead.

When I first commenced brewing from it, I combined it with malt; but I am now convinced that equally good beer can be produced by brewing from the mangold-wurzel alone. I did not find the beer better by using a moiety of barley-malt with it; and as the expense was far greater, I at length discontinued it altogether.

The mangold-wurzel should be cleaned (not washed), at the time of raising it, from the soil attached to it, and should be sliced as thinly as possible by a Gardner's patent turnip-slicer, as used for cutting turnips for sheep, the pieces being about half-an-inch thick by two inches in length. Thus sliced, it should be gradually dried upon a chicory or malt-kiln, until all the moisture has become evaporated, and it has acquired a crisp quality and assumed the flavour of malt. When dried, it should be removed from the kiln, and kept in sacks closely tied, in a dry situation, until required for brewing, as when exposed to the sun it becomes moist, and is apt to turn mouldy, which gives it an unpleasant flavour, and of which the beer will partake.

Two bushels of the dried roots are a substitute for one bushel of malt, the prime cost of which will not exceed 1s. 6d. per bushel; but where mangolds are plentiful, and estimated at 10s. per ton, the cost will not exceed 2s. 6d., or 1s. 3d. per bushel.

The roots should be put into a mash-tub, as in the ordinary mode of brewing from malt; but the water must be applied for mashing at a higher temperature, from 195 degrees to 205 degrees Fahrenheit, I consider to be the proper heat. But it is not material even if the water is in a boiling state at the time of application, indeed I have succeeded with it at that heat very well; but I believe it acts better when from ten to twelve degrees below the boiling point.

The mash should be well carried out, and the wort allowed to stand from one to two hours (I adopt 1½ hours), and then draw it off and boil it for one hour and a-half slowly. The hops should then be added, at the rate of from three to four pounds for each hogshead, or even in greater proportion if the beer is intended to be kept for a long time, and should be boiled rapidly half an hour more. The fermentation is afterwards effected as with beer brewed from malt, the temperature if possible being first reduced to 60 degrees, and a larger proportion of yeast being used than with beer made from malt.

The cask should be kept quite full until the fermentation has ceased, and the beer should be fined down with hops, to which a handful of salt and a little flour has been previously added.

The fermentation of malt liquors is seldom sufficiently attended to by persons brewing for private use. If possible, the fermentation ought not to be commenced above 60 degrees Fahrenheit, from 55 to 65 degrees being the extreme limits; and whenever a low degree of fermentation can be carried out, the saccharine matter is not too suddenly converted. A larger quantity of yeast should also be used in proportion as the temperature of the air at the time of brewing demands; and instead of using a pint only, any quantity up to four pints to each hogshead should be used. So that a speedy and equal fermentation may at all times be produced, the wort should be kept in the working guile from 24 to 48 hours, skimming off the yeast as it rises occasionally until the fermentation has partially ceased; and after it has been transferred to the casks, the yeast should be made to work off clean by continually filling up the cask until the fermentation has entirely ceased. The proper temperature of the atmosphere for brewing is from 40 to 50 degrees, and should never be attempted above 60 degrees. I am particular in mentioning these points, as I am too well aware of the carelessness and prejudices of servants entrusted with the carrying out any process of a novel character, or that does not accord with their preconceived opinions.

As is usual upon the introduction of any new production as a substitute for malt, I have met with much opposition—more, I may say, from the producers of barley and malt than from the consumers; and had I not felt assured that I was conferring a benefit upon the labouring classes, I should not have persevered. But I am happy to state that my workmen became, at last, perfectly satisfied with it; inasmuch as I was enabled, from the low cost of the materials employed, to make beer of greater strength—the *desideratum* with the labouring classes.

The malting process, as applied to the roots, drives off all moisture, which, from its large proportion, would have rendered the beer of an unpleasant flavour. The sugar (from 5 to 7 per cent.) is acted upon by the heat, and acquires the flavour of malt. And the quality of the liquor produced varies very little in point of quality from that produced from common malt made from barley; and upon a chemical analysis, it is presumed that little difference would be found to exist.

The exceedingly high duty still chargeable upon malt has tended greatly towards prohibiting its use upon farm occupations; and if the practice of brewing as herein detailed is carried out, a cheap and wholesome beverage may be produced, which the labourers ought to hail with pleasure. But prejudice is so difficult to overcome with them, that it will take a long time (in districts where malt has been previously used) to overcome it; and it was only until they were not able to distinguish the one description from the other, that they gave up their opposition.

I am, sir, your obedient servant,

Writtle, Oct. 21, 1856. Robert Baker.

ON THE PREPARATION OF WHEAT FOR BREAD-MAKING.

Of all the bread-stuffs, wheat is the most important, and is that to the preparation of which the attention of millers is chiefly devoted. It is to the amount of gluten contained in it, and the large per-centage (as compared with the other bread-stuffs) of flour obtained, that wheat owes its value as a bread-maker. But it so happens that fashion has dictated that the whitest flour is the best, and that the best loaf is that which is purest in colour. This, unfortunately, has an evil effect of a twofold character—namely, driving the baker to use sundry compounds, to obtain this fictitious appearance, which pure wheat-flour, be it noted, does not possess; and the makers to get rid of that portion of the wheat which happens to be more nutritious than that which is retained; this riddance being effected at considerable cost, through the agency of expensive machinery, which to a certain extent enhances the cost of the flour. The result of ordinary grinding is twofold—flour and bran. The former is that which is retained; the latter that got rid of, given to the pigs, or used in some way or other, but not in conjunction with the flour. This bran, which forms a large per-centage of the wheat, is, according to Professor Johnston (see "Chemistry of Common Life," vol. i., p. 99), "somewhat more nutritive than either the grain as a whole, or the whiter part of the flour...The whole meal, by simply grinding the grain, is equally nutritious with the grain itself. By sifting out the bran, we render the meal less nutritous, weight for weight; and when we consider that the bran is rarely less, and is sometimes unavoidably more, than one-fourth of the whole weight of the grain, we must see that the total separation of the covering of the grain causes much waste of wholesome human food." The same authority gives a series of illustrations showing the structure of a grain of rye, which in constituents very closely resembles that of wheat; from which it may be observed that the gluten of the husk, or that which forms the bran, is found in the interior covering, the exterior covering containing little of this essential. By removing this outer covering, the grain will yield purer and whiter flour than when it is left. Hence the attempts which have been made to effect this, previous to the grinding, or the preparation of the corn or grain in such a way that the process of grinding detaches only the worthless and colouring, and leaves the nutritive part. It is to the description of a plan on the latter principle, that we propose to devote a few remarks. The plan alluded to forms the subject of a patent granted recently to Nicolas Auguste Eugene Millon, and Leopold Moulin, of Algiers, Africa, for "certain improvements in the treatment of corn and other grains, and more especially in all that concerns washing, drying, grinding, curing, and preserving them." The remarks by M. Moulin, both in the specification of the above patent, and in a pamphlet published by him, are so pregnant with hints and suggestions on the above important subjects, that we trust no excuse is necessary for here offering a digest or resumé of them. It may also add to their interest when it is stated that the process is peculiarly applicable to the grinding of "hard wheat"—a variety of wheat containing a larger proportion of gluten or nitrogenous principle than soft, but which our millers have not yet been able to treat with the same degree of success which is obtained on the Continent, where, be it observed, the flour obtained from it is of a finer quality, and fetches a higher price, than that obtained from soft wheat.

In the preparation of good sound flour, the cleaning of the wheat from all extraneous particles forms an important part of the process. On this point the patentee remarks—"The mechanical cleansing of wheat, if performed as it has been up to the present time, leaves much to be desired. The foreign matters which the atmosphere contains incrust the surface of the grain, and deposit destructive germs on it. In certain countries the corn, which is trodden upon the ground under the feet of horses or mules, gives a grain less clean and pure; and if to these alterations in the grain all those which develope themselves during its preparation and its transport be added, sieves and ventilation will be greatly wanting. On the other hand, in consequence of the mechanical cleansing, the skin of the grain is not thoroughly detached in grinding, and the large pellicles of bran which it produces carry away the visible parts of the nutritive matter of the grain." In view of this, washing the grain has been recommended; this, however, is attended with dangerous results if not properly managed, and the thorough-drying immediately carried out. But this drying of the grain is, even under the most favourable circumstances—with good and economical arrangements—a most expensive and tedious process. The rapid clearing of the moisture from the surface of the grain—for under no circumstances should it remain long enough in the water to allow it to penetrate the interior—is effected by the patentees by the use of the "hydro-extractor," or "centrifugal machine." A short description of this machine, and its mode of operation, will be found in the article on "Grain Drying." But the grain is not thoroughly dried; it still remains to a certain extent damp. This, however, is no disadvantage, but, on the contrary, brings about a condition of the grain of the utmost value in the after-grinding processes.

In the treatment of *hard* wheats, it is necessary to damp or moisten the grain previous to grinding, the object being to soften the outer integuments, which in the grinding becomes detached; if this is not attended to, its adherence results in a large portion of the nutritive portion of the husk coming away with it. In the damping, the grain receives at its exit from the hopper a small jet of water, which raises its weight some one or two per cent. This wetting, however, does not cleanse the grain from all extraneous matters, as is desirable; on the contrary, it rather tends to make them more adherent. Again, the damping is very irregular; and to enable the moisture to spread from the parts of the surface well wetted to those dry, or comparatively so, the grain is allowed to remain for a certain period in sacks, until a uniformity of dampness is obtained. All this is, as will be obvious, very uncertain; and the result frequently is that the wet penetrates to the interior, and makes damp flour. Where the dampness or moisture reaches to, or exceeds, 20 per cent., the grinding cannot be carried on. Now, by washing the grain in properly-arranged apparatus, and immediately putting it into the "hydro-extractor," not only is it thoroughly freed from all extraneous and deteriorating particles, but the amount of necessary moisture required is regulated to a considerable degree of nicety. Nor is this all; the most important results remain to be described. "When the grain which has been in the cylinder (hydro-extractor) in the condition which we have just defined is taken to the mill, its products present the following modifications: The water, which has principally damped the external and woody pellicle of the skin, detaches it, and makes thus the ordinary bran; the grinding allows the small slight transparent scales to escape, and of a lightness never attained hitherto: this is the entirely woody and cortical portion of the skin. The principal azotes so abundant in ordinary bran exist here only in a very reduced proportion. It is the same with the aromatic and sappy matters. This bran retains no trace of farina: by a microscope even, some nutritive grains can hardly be discovered....... For the same reason that the results are so perfectly accomplished, the proportion of the superior products of the grinding is increased also: besides, the bran, which acquires a great elasticity, does not break; the flour and the groats become free from impurities; the double result is obtained of having the products finer and more abundant." But another valuable result is obtained by the principle of "essorage," as it is termed by the inventors (from *essoreuse*, the French name of the centrifugal machine). On washing the wheat until the water runs off clear, it may be considered free from impurities; but on being subjected to the action of the hydro-extractor, "a thick and coloured liquid is expressed, which on evaporation yields a considerable residue." This extraction of colouring matter shows that a purifying effect is due to the centrifugal force, detaching from the surface of the grain matter which escapes the longest washing. Even the colouring matter which lodges under the epidermis of the integument is carried off; how much more likely, then, are the obnoxious particles on the surface of the grain to be removed!" This purification the inventor thinks of great importance in the preservation of grain, as he has observed that grain essoraged, even although damped with the water, has kept longer and better in bags and close vessels, than grain not subjected to the process. This is in itself a most important result. It is also applicable to the restoration of unsound grain. M. Millon mentions that barley refused by horses, has been eaten by them with avidity after a small cold washing and passing through the essoreuse.

We have already shown that the bran, the product of grinding on the ordinary plan, contains a large proportion of gluten. M. Millon, in a table in his pamphlet, gives some interesting details respecting the value of the bran the result of essoraged and non-essoraged wheats. Thus, the large bran of hard wheat, watered, winnowed, and ground on the ordinary plan, gives a per-centage of 12·32 of gluten; the same essoraged, only 6·17.

The grinding must follow the essorage immediately, "or it loses its peculiar properties, we have discovered in hot weather fifteen to twenty minutes will be sufficient for the skin to become again adherent; it must then be submitted to the action of the drying cylinder and the grinding."

In the application of the process to soft wheats, M. Millon is inclined to believe, from the sponginess of their inter-integuments, that their absorbing powers will be greater than hard, and that a preliminary drying will be necessary. When the wheat, whether hard, semi-hard, or soft, contains a large per-centage of water, drying will be necessary before the essorage can be effected. Again, where it contains insects, mouldiness, or other deleterious matter, they should be got rid of by repeated washing, and the extra water reduced four or five per cent. by passing it through a drying apparatus.

We do not consider it necessary to describe the washing apparatus, the drying apparatus, or the hydro-extractor used by the inventors: our object has been to direct the attention of our readers interested in the matter to a principle which we consider contains much that is valuable, both as regards the *preparation* and the *preservation* of grain. R. S. B.

BIRDS AND THEIR PECULIAR SYMPATHIES.—We have shown how the affections of a little bird may be secured for life. But, it may be asked, "Can all people tame birds so easily?" We reply, no; certainly not. Birds have hearts, like ourselves; and their sympathies are as strong as ours. They are full of discernment; and they instinctively know who is kind and loving. There are certain persons by whom birds can never be won over. Their gardens are deserted by the feathered tribes; nor are their cage-birds, in-doors, any more susceptible than the others. There is no affinity—no sympathy. Hence the incessant inquiry, "How shall I tame my birds?" Whilst Nature continues to be outraged as she is, even the birds intuitively shun us; thus proving themselves every way our superiors, by turning their backs upon bad company.—*Kidd's Treatise on the Robin.*

AGRICULTURE AND THE AGRICULTURAL LABOURER.

No man, especially of late, has been more systematically attacked than Mr. Edwin Chadwick. One great power, as is well known, has long opposed him, while of course there has been no lack of imitation. And yet Mr. Chadwick is hardly deserving of such wholesale abuse. Few men, however right or wrong his own views, have done more to provoke profitable discussion, and no one gets up a case with more care or research. Enthusiast as he may be, obstinately wedded to his own opinions, and perhaps a little prolix at times in maintaining them, one still never hears him speak without gaining a wrinkle, or having some fact more clearly impressed upon the attention.

Mr. Chadwick's name is by no means an unknown one to the agriculturist. For years now, one of his pet themes has been the Law of Settlement, and its unfavourable influence on both the labourer and his employer. In tracing out the evils of this system, he manifested his customary perseverance, and with it a very judicious direction of his energies. He sought counsel of those most directly interested in what he was doing, while the deduction he drew from their experience was in the first instance submitted to those from whom it was derived. The paper which he read to the members of the London Farmers' Club, detailing all he had learnt and seen, has still its value and importance. The body to whom he addressed himself at once recognized its worth; and if Mr. Chadwick never did anything more, his honest and indefatigable endeavours to abolish the poor man's settlement should always secure for him the thanks of the community.

One result of these exertions has necessarily been to make him more than usually well acquainted with the condition of the labourer. It is very evident that since he first took the case in hand, he has never lost sight of his humble friend. Every now and then he turns up with a notion on the subject, of which the least that can be said is, that it is well intended. More frequently he offers us something seriously to ponder over, well studied, forcibly put, and happily illustrated. We take it to be a compliment to Mr. Chadwick that his addresses tell far more on perusal than they do in delivery. It is the matter and not the manner of the man which after all recommends him. We may consequently not have much to regret in our absence from the recent Congress at Brussels; the more particularly as we now enjoy with our readers the opportunity of seeing what Mr. Chadwick had to say there. The report appears in our supplement of to-day. His theme, again, was the agricultural labourer, well argued in this wise—that improvement in cultivation must depend in some degree on improvement in the condition and intelligence of the workman. The question, it will be found, was treated in a way by far the most likely to create a lasting impression. Our duties to one another, the dictates of charity, and the feelings of philanthropy are at best but indefinite, as they are but partial in their action. Mr. Chadwick at once passes them over. He regards rather the improvement of the labourer simply as a question of self-interest to those who employ him. If you want your work better done, you must have better men to do it. If you want your work done cheaper, you must pay more for it. There is nothing so dear, says Mr. Chadwick decisively, as cheap labour.

The more we consider it, the more shall we come to admit the absolute necessity for thus raising the tone of the agricultural workman. The progress of invention and the increasing application of mechanical power already demand this. They require in their use something more of the head of a director than the mere hand of an automaton, who swings the flail until he can swing it no longer, or drags on through some other dull, dead work, without mind, hope, or fair remuneration to incite him. "From particular inquiries which I have made in various parts of England, I am assured that in agriculture as in manufactures, wheresoever labour-saving machines have been introduced, or labour-saving improvements in processes have been effected, more labour, of a higher quality, and better paid, has been required. At present, one great practical barrier to improvement in agriculture is the intractability, from ignorance and general low condition, of the labourers. It is a question, and a question overlooked in the consideration of the economy of sound popular education, whether there are not more successful inventions of machines and processes, especially in agriculture, unused than are used—essentially successful inventions and processes having been abandoned on account of the obstacles arising solely from the want of agricultural labourers to apply them." So says, and well says, Mr. Chadwick. We can answer for the truth of every word of it. How often, at our different agricultural meetings, have we seen the farmer thus turn away from the stand of the manufacturer! He has himself carefully examined the invention, and listened to a full explanation of its uses with pleasure and interest. But still he turns away at last with a kind of half smile, half sigh:—"It's a capital thing, I can see; but, bless you, my fellows would never be able to do anything with it. They would knock it all to pieces in less than a week." How often has a maker, we should like to know, had an implement returned, or its fair character traduced, from this very cause? As a truism, we cannot get on one without the other. It is the old story of the organ-blower over again; and the tradesmen cannot sell, as the farmer cannot buy, without somebody further to trust to. Uneducated and underfed, it is thus the labourer now looks at us, putting his query as one quite as much of profitable consideration to us as to him—"Shall it be *we*, then?"

It is a palpable fact, and one never overlooked by

Mr. Chadwick, that bad farming and badly-paid labour go very much together. Our friends such districts must not disregard the warning here implied. The time appears to be coming that, even with such a population as ours, the labour market will reach to par again, and when it will be a man's own fault if he does not make the best of what he has to sell. No one has striven more for this than the gentleman to whose paper we are now referring. It will be hard times, however, for the employer who has to pay fifteen shillings a-week, when he is still only farming up to eight or nine. Verily, improvement in master and man, look at it how you will, must go together.

The Brussels address is no mere theory, and by no means a one-sided view of the matter. The whole tone of it, with the illustrations so well introduced, are essentially those of "a practical thinker." It is not the mind alone of the labourer that Mr. Chadwick would develop. It is not education alone that he would depend upon. The physical powers demand equal attention. If the best part of a horse goes in at his mouth, a vast deal of the good in a labouring man comes from the manner in which he is fed. This is the great secret of the beef-and-beer-consuming navvies who carry all before them. A man may do famously on tea, or be all the better for knowing the taste of little beyond oatmeal. It sounds very nice and economical; but after all, when you come to put it into practice, we are afraid the true economy is with Mr. Chadwick. How strong and how telling is the comparison between the mile of road made by the Lancashire navvies, earning four or five shillings a day, and that by the Irish at a shilling a day! As Mr. Chadwick has told us before this, men will not do "sweating work" without "sweating wages."

We commend the paper to the best attention of the public. It is full of useful matter, and conveys in its effects the surest incentive for our progress. On this very evening the Farmers' Club meet to once more consider the same subject. It will be interesting to see how far they and Mr. Chadwick still manage to agree.

It need not be enforced how strong is the interest which a nation has in the improvement of its agriculture; but I am a great advocate for agricultural improvement, for this especial reason, amongst others, that I have found, as a general rule, improvements in agriculture can only be effected through an intelligent and improved class of labourers. From particular inquiries which I have made in various parts of England, I am assured that in agriculture, as in manufactures, wheresoever labour-saving machines have been introduced, or labour-saving improvements in processes have been effected, more labour, of a higher quality, and better paid, has been required. At present, one great practical barrier to improvement in agriculture is the intractability, from ignorance and general low condition, of the labourers. It is a question, and a question overlooked in the consideration of the economy of sound popular education, whether there are not more successful inventions of machines and processes, especially in agriculture, unused than are used—essentially successful inventions and processes having been abandoned on account of the obstacles arising solely from the want of intelligent labourers to apply them Thus the reaping machine was found to be an invention made a quarter of a century before, but abandoned. A friend of mine, an able machanist (the late Mr. Smith of Deanston) had invented one which succeeded in the field, but was destroyed in the barn by the ignorant carelessness of his labourers. At present, it is common for an agriculturist, after the inspection of a machine at the manufacturer's, to say, "Well, if I buy that machine you must find and send me a labourer to work it and take care of it, for I know of no one in my own parish who is fit to be entrusted with it." "But what wages do you give?" the machine-maker asks. If it is a Dorsetshire or a Buckinghamshire agriculturist, "Eight or nine shillings per week," will be the answer. "But those wages will not do," says the machine-maker. "You can only get a labourer fit to be entrusted with that valuable machine at sixteen shillings a week." And if the machine is taken, in one form or other the condition of the increased wages is generally submitted to; and so, under an impulse for economical improvement, improved labour is introduced.

A quarter of a century ago there were agricultural riots, in which labour-saving machines were broken; and the popular violence was justified, and the use of machinery was discountenanced, even by members of Parliament. We are told that it is the political economy of the Chinese to prevent the use of horses in order to sustain the stock of labour for men; all they succeed in doing by this policy is, to make men do the work of horses, and in that respect to confine them to the condition of horses in perpetuity. In some of the agricultural districts in England better views have now begun to prevail, and labourers have refused to do thrashing work by the flail, because, as they have justly and laudably said, that was work for a machine, which they would not degrade themselves by performing. It is now a common effort of intelligent agriculturists to give their labourers an interest in the use and success of machines; and that interest, they find, must be improved wages or condition to the labourer. The most improved agricultural labour is conducted by well-superintended labour, at piecework; and that description of work can only be well obtained permanently, by full payments, to sustain the interest in it; and this interest is, to a great extent, independent of the question of supply and demand.

This is a topic which I believe to be of vast importance to the future of the labouring classes, of which I have only the means of indicating some of its economical bearings.

In treatises on agriculture by persons of authority, one or other course of agriculture is recommended to be adopted, as the labour is said to be dear or cheap. Now, from considerable observation in England, and from such information as I have been able to obtain, low-priced labour rarely is cheap labour, either in agriculture or in manufactures.

An eminent manufacturer and successful manager of labourers stated to me, in the way of illustration, that it was with his workmen as it was with a valuable horse-power machine. "I cannot," said he, "afford to work my machine with a horse that costs less than £30, or eats less than eighteen pounds of oats a day." As it was with the horse, so it must be, under ordinary circumstances, with men—the eating the corn, the sufficiency of food and comforts, the existence of objects of desire, to create an interest in the work as a means of obtaining them, are becoming more and more positive conditions; for whatsoever be the number of other horses in the market, the work will fall off without the horse have his 18lbs. of oats. I have ascertained in England that in highly cultivated districts, where agricultural labour costs 14s. and 16s. per week, the work was, for quantity, as cheap as in districts where agriculture is lower and where wages were only 8s. or 9s. a week. Nay, we have in my county—Lancashire—a class of workmen strangely called navigators, or "navvies," it is supposed from having been originally employed in digging canals and works for serving inland navigation. These Lancashire men work in gangs of five, and will admit no men into their gangs who cannot, as their *minimum* task, load twenty cubic yards, or twenty single-horse loads, of earth in a day. I have known of instances of men of this class, as a feat, doing even double that quantity. A mile of road made by labourers of this superior class, earning 3s., 3s. 6d, or 5s. 6d. per diem, has been executed in a much shorter time, and has been finished as cheaply, as a mile of precisely the same sort of road done in Ireland by pauper labourers whose wages were only 1s. per diem. Common agricultural labourers, when they have been allowed to join these gangs of navvies, and have been "alimented" and seasoned to their tremendous discipline, on their return have astonished the farmers by doing an ordinary day's agricultural work before noon, and by putting their spades on their shoulders, and going away for the rest of the day. A noble friend brought down to his estate in Dorsetshire a foreman accustomed to superior labour at piece-work. Judging of what would be his answer, I said to this foreman, "Will you not get this work done cheaply; here the labourers are got for only eight shillings per week?" "But *they* would be dear at *six*," was the reply. "How is it here with your other classes of artizans?" I inquired,—"your journeymen bricklayers, for example, what sort of workpeople are they?" "Such as from their wages you, sir, would expect," was the answer. "And what wages are those?"—"About twelve shillings per week." "And how many bricks do they lay in a day? "Not more than between three and four hundred." "And how many do your town bricklayers lay, to whom you pay double wages?" "More than a thousand a day!" was the answer.

The same agricultural labourers on that estate, when put to piecework for draining, and made to earn nearly one-half more wages, were, by higher food, soon put into a superior physical condition. Besides the labour which demands great vigour, there is the labour in agriculture which demands great skill; and skill is more productive than ordinary agriculturists are aware of. I was staying recently with a friend, an eminent and successful English agriculturist, Mr. Huxtable, who, whilst I was with him, saw a boy conducting a new spring waggon over the ridges and furrows of a field in such a manner as to endanger the waggon, when my friend ordered a man to take charge of it, and reproached his bailiff with his wasteful improvidence in entrusting so valuable a piece of machinery as that waggon and the horse to a boy. My friend observed, moreover, than an intelligent driver, who would load properly and conduct a horse carefully, was, for the saving of the horse as well as the machine, worth his double wages; that even in the common operation of digging one labourer who was skilful was more profitable to him at 12s. than another was at 8s.; and so with other agricultural processes. The same eminent agriculturist has, with the aid of steam and improved machinery and processes and labour, brought the land of the average annual rentals of that county—namely, 5s., 9s., and 15s. per acre land—to an improved average value of 30s. per acre per annum; and this advance has been made with a return of 10 per cent. on the capital invested. Now there is no other reason than mere ignorance and routine why the whole of that county should not be cultivated in the like manner as this one portion of it. But if it were so, Dorsetshire, instead of being cultivated by only 16,000 labourers at only 8s. or 9s. per week wages, would require for its improved culture between 30,000 and 40,000 labourers, at 10s., 12s., 14s., and some of them 16s. per week. And this county is to a greater or lesser extent an example of what may be expected of agricultural improvement throughout the whole kingdom; and that improvement, whilst it must raise wages to the agricultural labourers, and remunerate the capitalist, would cheapen food to the general population.

The most eminent of the "navvies" in England come from the hill districts of sandstone-grit and granite in Lancashire and other northern counties, where there are favourable sanitary conditions of pure soft water and forced ventilation, and some natural drainage by winds and storms. Their alimentation, too, has been generally good. Some of the leading navvies have represented to me that they consider eleven pounds of meat per head per week a necessary of life for good work; but I should not accept this as to the species of diet as an absolute dogma, for they themselves have admitted to me that eaters of oatmeal and potatoes (with milk), though in great quantities, have done good work with them; what, however, appears to be certain is, that a superior alimentation at the least is required, though it is by no means the sole requisite, and mental as well as bodily stimuli are needed for the attainment of superior work. M. Nidault, a French engineer, in his treatise on irrigations, gives the following account of a similar class of labourers to those by some deemed peculiarly our own. He describes as a most interesting class those who devote themselves specially to the execution of canals and other irrigation works in Italy. "It is," says he, "that of the small contractors, or simple task-workers, who bring with them a gang of workmen, at the head of which they work, and by whose means they can advantageously contract for considerable works, especially in digging or levelling. The digging of an irrigation canal, if rather a large one—one, for instance, of seven to eight metres wide, and which may also serve for navigation—is one of those works which, to be well done, should be done with promptitude, or at best without any delays, which requires that a number of workmen should be concentrated at one point. The resources of the locality being generally insufficient, they are obliged to seek labourers in the neighbouring districts, and prefer applying to the poor and populous countries such as Savoy and German-Lombardy. It is true that there they can find cheap labour, but at the same time the labourers are without vigour; and though they may be contented with small wages, they will also give very little work. I have always found the other system much better, which consists in employing those who gain high wages, but who also work well. There is not an engineer who would not agree with me on this point. There are some who would say that, in certain satisfactory results, obtained by different causes, this element has been the principal one of success.

"From time immemorial, the Piedmontese provinces of Ivrée, Brille, Varillo, and others, but especially the high country near the lakes, including the cantons of Arona and Bellazona, are in the habit of sending every year into other countries a considerable number of active and industrious men, who represent precisely this class of small contractors, the employment of whom has generally the best results. Many of these migrants are painters, plumbers, chimney-doctors, and decorators; but their most remarkable talent is that for "navvying," and for this qualification they are sought at great distances, as they always will be whereever their work can be appreciated. In those *healthy* districts the peasantry have had for *a great number of generations substantial food*, as is generally the case in irrigated countries, where cattle are numerous. It is doubtless by these means that the Piedmontese "navvy" is so indefatigable, and also exempt from the diseases that generally prevail amongst the labouring classes. I have seen them, without suffering any injury from it, remain twelve hours working in a deep cutting, with their heads uncovered, where the reverberation of an

Italian sun would have been intolerable to men of any other mould. It is to be observed that they execute quickly and well whatever they undertake. To see them form a slope (*dresser un talus*), or dislodge a rock, either with the pickaxe or with powder, one cannot help asking—Are they not rather artists than labourers? For they have the secret of combining an extraordinary speed in the work they undertake, with the most perfect execution; and herein lies their great value. They will not accept work by the day; but it is not their habit to work lazily, and even the highest wages barely remunerate their labour.

"The most skilful of these labourers—those who have saved a little money—become contractors, or task-workers. They have a gang of twenty-five to thirty, or even a 100 to 150 picked men, that they take with them wherever they are required, and undertake works of great importance for a fixed sum. If more workmen are needed than the gang contains, the contracter sends for more. He knows exactly where to apply in case of necessity. They know certain villages in Germany where they go to recruit their gang, as the officers of the army go for their horses. 'This class of men,' says this French engineer, 'is entirely wanting in France, and it ought to be formed and encouraged.'

In England I have written pamphlets, and got a parliamentary committee of inquiry, and done whatsoever was in my power to prevent the valuable class of labourers which we have there already formed, though rudely, from being deteriorated and destroyed by the reckless and discreditable administration of railway works. I observed, and endeavoured to call attention to the fact, that the sons born in towns from these hill district labourers were shorter and less strong than their parents, and that the parents who came to reside in the towns, in consequence of the defective sanitary administration there, lost on the average about ten years of working ability, as well as of life; and that of the fine children born of this class in the towns more than forty per cent. are destroyed by preventible disease before their fifth year; but hitherto the efforts of powerful friends, with myself, in this cause have been only of partial effect.

I may observe, *en passant*, that I have been informed of one other similar class of labourers to our navvies, the *terrassiers*, who come from near the Polders, of whose condition I have not obtained particular information; but English navvies have been much employed on railway works in France, and have earned as piece-work from 7 fr. to 8 fr., and in some instances as much as 10 fr. per diem; and they have also in various parts of Germany earned double the best labourers' wages there. And this superiority, I may say, of a highly alimented and skilled labour, has been maintained in every clime. A friend of mine, a civil administrator in India (the Right Hon. Holt Mackenzie), informed me some time ago that he had made a note of the comparative cost of Indian, Chinese, and English labour when he was in India, and that the general result was, "that for some works an English workman, of average efficiency, was equal to several Chinese, and one Chinese equal to several Indians (Bengalese); and this independently of the advantage or disadvantage of the tools employed. And the conclusion I drew," said he—and the conclusion which, I too, wish now to enforce—"was, that for estimating the cost of labour, or of the work done, there could not be a worse standard than the wages of the labourers."

Much in this instance might be ascribed to climate; but the spectacle has been presented in Calcutta of Lancashire artizans, imported at high wages, doing work there under the shade of umbrellas held over them by Hindoos, engaged at low wages to attend and perform this service. Labourers of our Army Works Corps speak with respect of the capabilities of the Turkish labourers, and of particular feats of strength performed by them; but Mr. Rawlinson, our sanitary engineer, declares to me that the Croat labour, chiefly engaged by us in the first instance, was dear at sixpence per diem; and that in relation to the works performed in the East, by whatsoever race, it would have been far cheaper to have taken out highly paid and trained English labourers, and materials, all the way from England, for the execution of the works. In the course of discussions on the subject with the members of the congress met here, I have received much confirmatory testimony upon my view of the facts. One member of the congress, a merchant, informs me that he has had ships built abroad, and also ships repaired in every principal port of the world; but he avows that, notwithstanding the very high wages of our shipwrights, he has found their labour as cheap as any he has elsewhere met with. In respect to agricultural labour, another of our colleagues, a landowner in Poland, who has been some years in England, and who has studied its agriculture, states to me that he found one German labourer equal to two Polish labourers; but that three Polish labourers—and those not serfs—were required to do work equivalent to one average English agricultural labourer. In this extreme difference, however, the difference of tools was included with the difference of skill and energy. Another Polish gentleman here, who studied at the English Agricultural College at Cirencester, states to me that he compared the expense of the ploughing done there by ploughmen at 14s. per week wages, with an equal quantity of ploughing done on his father's estate in the accustomed way there, and he found that the work done at Cirencester had the advantage in cheapness. On a particular comparison made in Normandy, the labour of three Norman agricultural labourers was found to be equivalent only to that of two English, or more particularly two Kentish labourers; and from other information which I have received from engineers, confirmed by members of the present congress, about three Danes, or Norwegians, or Swedes, would be required to do the same quantity of work as two average English labourers. Superior workmanship, as well as quickness of execution, with the aid of superior tools, will frequently tend to augment the value of the English labour beyond the difference of the gross produce. Admirable work is done by Anglo-Saxon men in Canada, and in the United States of America; but I repeat, that I do not ascribe the difference of result mainly to race, because, as I have observed, the labour of Englishmen, depressed by maladministration and pauperism, is often as inferior as any other; and because depressed Irish labourers, when put into suitable training and condition, are found, according to the acknowledgment of English labourers, to keep step with the best. Indeed, in the Crimea, under the directions of our army administration, the ordinary labour and tasks of earthwork required from soldiers—raised chiefly from those same districts from whence the best navvies have been obtained, and acknowledged by impartial observers to have in physique no superiors amongst all the troops in the field—were only to remove ten cubic yards a day in a loose soil; that is to say, that at least two soldiers were required to do the work done with an interest and "a will" by one navvy—the navvy very often the brother or relation of the soldiers, or coming from the same villages.

I am glad to find that the general observations of the most eminent continental agriculturists—of Count Gasparin in France, of Van Thäer and Burger in Germany—are in accord with my own in England. I regard the economical element which those facts display to be of the greatest social and political moment; for on this economical element will depend, not only the extinction of every form of serfage, but of slavery itself. I have been consulted on drainage as sanitary works by proprietors in the West Indies, and have had some insight into the slave labour there; and I am convinced it is dear labour, as contrasted with white free labour. Slavery will sooner fall with our brethren in America when they find it, as they eventually will do, as compared with improved free labour culture, bad as an investment, than by any amount of condemnation of it, as being bad as a social institution. It appears to me that Count Gasparin justly cites, as an instance of the power of free as against slave labour, the fact that the manufacture of sugar from the beetroot keeps its ground; that is to say, that the slave (or the slave-bred labourer), with a plant containing 18 per cent. of sugar, grown in a superior climate, has great difficulty in contending against the free labourer, who cultivates a plant which contains only 8 per cent. of sugar, in a climate most unfavourable to its development.

In England, I have known agriculturists from the most advanced districts of the North, tempted by the cheaper land, the apparently cheaper labour, and better climate of the South, go there to take farms which were in the market; but when they have examined the quality of the labour there, they have declined the enterprise. I am happy to find that Count Gasparin has made analogous observations. "One day," says he, "our worthy and excellent colleague, M. Huzard, being consulted on the expediency of the purchase of some land in a certain canton of France, answered, 'Beware! you will not get from land there the promised return. I know the men of that country; they want activity; the pupils who come from it to our veterinary school do not strike hard upon the anvil!'" "What fine and just appreciation!" exclaims the Count. "There, where the labourer's arm is enervated, whether by physical debility, arising from a bad regime, or by long habits of idleness—there, where they do not strike hard upon the anvil, the value of the land is affected by their depression! Of old our forefathers said, 'Tant vaut l'homme, tant vaut la terre'—(as is the worth of the labourer, so is the worth of the land)."—*From a Paper read by Mr. Edwin Chadwick at the Brussels Congress.*

DWARF RUSSIAN WINTER BEANS.—These, if true to their kind, are remarkably early and prolific; and if planted uniformly and singly with good seed, will produce immense crops. And this is the variety we recommended to be planted, between wheat, in one centre row of four feet space on the middle of each stetch, on land which is heavy and not suitable for potatoes, at one peck to the acre. They are ripe a fortnight before the wheat, and form a rest for it, as it becomes top-heavy. One bushel will plant an acre entire, admitting there were no furrows to interfere, at one foot square apart, or in two-feet rows at six inches distance in the rows, which is tantamount to the same space for each plant, or equal to one foot or 144 square inches; and consequently less than one bushel is required for an acre on common stetches where furrows do intervene, and one row out of five must necessarily be sacrificed. We have selected for stock this season forty stubs of one, two, three, and four stalks on each stub, which averaged thirty pods and 105 splendid plump and bright beans; in all, just six pints off the forty plants. And this is not uncommon of anybody else's crops; and no doubt that thousands of stubs of this description might have been collected from one of their acres, as we could have done from ours. And some with forty, and even fifty pods, are very common where they happen perchance to have room in open spaces to gain the ascendancy, and to predominate in growth over the weaker plants, which are crowded, and which consequently have to keep in the back ground, like the puny plants of thick corn; ultimately proving abortive, and only a few out of the many actually starting into vigorous growth to make the crop at the expense and sacrifice of all the rest. Supposing each square foot, or every 144 inches, of land to produce one of those ordinary and natural stubs and stalks, there being 43,560 square feet in a statute acre, the produce would be 4,573,800 beans; and as 700 beans make exactly 1 pint, it gives 12 qrs. 6 bushs. 3 qrts. to an acre. But notwithstanding this to be a reasonable supposition, yet an acre of land has never been known to produce this quantity. We may, however, surely admit it possible, by care and assiduity, after making all allowances that can be thought of for casualties, to obtain half as much as this quantity, viz., fully six quarters per acre. And note, that as 43,560 feet are contained in one superficial acre of land, and 700 beans are in one pint, it will not require more than one bushel to fully plant it at a foot square, whether in one-foot rows or two-foot rows (the latter is preferable; and to be cleaned with the scarifier and horse-hoe in early spring), but just about 62½ pints only. Thus this variety of bean will be found to be the earliest; and consequently the surest, most productive, most valuable, and most lucrative of any other that can be grown. And, on account of their diminutive size, it will of course not take more than half as many in measure to plant an acre, whatever may be the distance anybody may persuade themselves is necessary for them to be planted, than of those varieties more than double their size, and of less value; and, of course, at a great saving of seed, which is the point we in all our harangues are particularly aiming at. Ours this year weigh just 17 ounces per pint, or 68lbs. per bushel, or 19st. 6lbs. per sack, which is far beyond the weight of any other larger variety extant.—Hardy and Son, Seedgrowers, &c., Limbourne Brook and Knowles Farms, Maldon, Essex. Oct. 17th.

TRANSPLANTING WHEAT.—Although the fecundity of the wheat plant from this process is beyond general belief, producing ears of prodigious size, we will not press the subject, as we know that it meets with reasonable objections; and the chief one is, that it cannot be done on a large scale by farmers in general, and time would not admit it. We would, however, briefly observe, that, as the proper time is now at hand, namely, October and November, or about a month after the plants appear above ground, for performing it, that farmers would bestow a charity on their labourers who have large gardens and allotments, and who pride themselves in growing corn for competition shows, by giving them leave to thin their thick crops with a knife where the plants stand in pairs, for the purpose of transplanting it on their grounds, without any expense to them for seed, and with full assurance at the same time that they will do themselves much service by conferring the favour on them, in augmenting the produce of their own crops, provided they see that they are thinned with care and judgment. The plants are best if taken up and planted with their roots entire, and the mother-grain attached to them, which it will readily do; but the tops should be trimmed to about two inches when gathered in bunches, and the whole should be completed by the end of November. It is, however, a bad plan to patch broken plants by transplanting, as the two crops will not ripen together.—Hardy and Son.

THE AGRICULTURAL LABOURER.

Another glance over the many meetings of the autumn, and we get up the case of the labourer. It has been more than usually well argued. Indeed, the tone of these gatherings has considerably improved since we first had occasion to refer to them, some six weeks since. Of the many topics, however, here introduced, none has been spoken to with so much earnestness and heartiness as the condition of the working man. It may, perhaps, be a work of time; but of the good that must eventually follow such deliberations there cannot now be the slightest doubt. And yet what a joke it was, to drink health and success to the labourer! How people who really ought to have known better, deprecated these societies having anything to do with him! How their interference would enervate him, their sympathy disgust him, and their ill-directed efforts end in nothing but failure and mutual dissatisfaction.

We believe that no one, who reads over the extracts we give in another part of our paper, but will arrive at a directly contrary opinion. The effect of such addresses is already being felt—in some quarters probably more than others; but still the improved condition of the labourer is taking root, and in good ground. The great facts of the question are becoming familiar to us all. If we do not do our part, it is from no want of telling or knowing. The chief deduction, moreover, to be drawn from all we hear is, that we ourselves have much to do. The condition of the labourer must be more or less in the hands of his employer. It is to the best interests of the latter to rank not merely as the master, but as the next friend and special advocate of his workmen. You may establish schools, subscribe for libraries, grant allotments, build proper habitations—and all to little purpose, without the crowning influence and encouragement of the employer. We find this everywhere insisted on. Lord Leicester declared it two or three years ago, at one of his own gatherings in Norfolk; while Mr. Whitbread quotes his lordship in a very good speech at Woburn:—"When all this is done, you have only then placed it in the power of the tenant-farmer to improve his labourers." One of the Woburn tenants confirmed this but the other day at the Farmers' Club: —"He agreed as to the influence of the example which the farmer set, in his dealings with the labourers; and he thought that a good example, and promptitude in correcting vice, or any approach to it, on the part of the employed, would prove more beneficial than any amount of mere book-learning." Mr. Baker, at the same meeting, says, emphatically:—"Rely upon it, you will never effect much unless with the master's co-operation; indeed, he should say, upon the whole, that the improvement of the moral and social condition of the lower classes rested more with employers than schoolmasters." Further, the resolution of the Club confirms this, by stipulating for "a continual attention to the labourers' wants on the part of the employer."

And in what consists the master's co-operation? What are his duties, and what the labourer's wants? There is much to do, no doubt, and much still the master may do. Let us see what this is. The first step, then, towards improving the condition of the labourer is to provide him with a decent and comfortable home. Without this you can effect no permanent good. Is it, however, the duty of the master, of the farmer, or mere occupier that is, to supply this? At any rate, it is his duty to look to it—a duty he owes as much to his own interest as to that of his man. He will be pretty sure to stipulate for good farm-buildings for himself, barns for his cows, stables for his horses, and sheds for his cattle. Let him look even beyond this, and crave good cottages for his work-people. With these once obtained, his care anything but ceases. Nothing but the experience of the practical man could have warned us that good cottages often become great abuses, and that the practice of taking in lodgers leads to as much immorality and discomfort as the miserable hovel from which the family may have been removed.

With a good cottage we naturally associate a good garden; if not attached, by means of the allotment now becoming so popular. The great thing to guard against, in making such a grant, is, that it be not too large. No benefit, but much evil, would arise from converting the labourer into a petty farmer; while with a comparatively large piece of land, if he cultivate it as garden ground, the chances are that he will either not do it properly, or, if so, only at the cost of his employer. Of course the allotment should be as near the man's home or work as possible; while such a system can only become general with the actual abolition of the law of settlement, or by the good sense of the country rendering it nugatory. A labourer, who has two or three miles to go to his work, and two or three home again, will not have much time or inclination for gardening.

This, we take it, would afford the means for "a proper employment of spare time" both in summer and winter. In summer the man would spend his evenings in his garden—in winter by his own comfortable fire-side. He might here be supplied with such books adapted to his station as might both amuse and instruct him. For the purely agricultural labourer, residing in a rural district we are afraid the reading-room would be comparatively useless, if not impractical. Evening schools for the young are warmly advocated; but, although such cases are cited as men at a mature age frequenting them, we fear these can at best be but exceptional. The education itself of the labourer can scarcely be regarded or tested by the common conventional usage of the word. It is not the reading or writing alone, but the incentive to good conduct and to skilled work with which the mere school education is accompanied and completed. The master's eye, again, in fact—his continual attention from the time the boy is first known to him.

And what further may we ask of the employer, towards improving the condition of his servant, and removing him from the chance of temptation? In accordance with a custom that has nothing but the force of a custom to recommend it, does he still pay his labourers on the worst night in the week for a workman to receive his wages—on the Saturday? If so, he is giving his men anything but fair play, denying them the opportunity of making the best of their marketing, and tending to nothing but inconvenience and injury. Surely, as a direct duty of the employer, this may be easily and instantaneously remedied. Again, as is the practice in some districts, does he pay partly in money and partly in drink? With a little earnest endeavour so pernicious a plan may be as certainly broken through. Or, further, are men positively forced to drink, by the meetings of their own benefit societies being almost as a rule held in public-houses? We need not stay to dilate here on matters that all come so clearly within the duties of the employer. They are all well spoken to, in the evidence we have collated. Lord Albemarle at Diss agrees very much with Mr. Spearing at the Farmers' Club, as to the conduct of these benefit societies. Mr. Biddulph and Mr. Thorold, at Ledbury, denounce, from their own observation, and with equal warmth, the system of payment in drink. They need not despair of inducing their neighbours "to do the same." The Reverend Mr. James, who has a reputation amongst agriculturists to add to the high esteem of his parishioners, asks, as an especial boon, that the wages shall not be paid on the Saturday. Mr. Baker and Mr. Thomas both offer us a lesson, in their own satisfactory experience, of what may be done in substantially improving, and, as it were, "making" their younger men. Lord Henley only leads many others in his approval of judicious allotments. Mr. Rolfe, at Docking, is especially happy in his exposure of Poor Law settlement, concluding, once more, that a great deal of "the evil arises from the man not living in a place where he could be under the eye of his master." Improved house accommodation, as the first necessity, has a word from every one; while *judicious* education is gradually coming to be more clearly defined.

Every one of us has a duty to perform here. The Government might look with advantage to the operation of this Law of Settlement, as well as to the effect of the Malt Tax. We must do the landlords the justice to say that they appear more and more inclined to take their part. The centre, however, we repeat, of all this, is the employer. Without his aid, we shall never be set or kept going. There is much, too, he may do with little inconvenience to himself; while let him ever remember, as the best of truisms, that he cannot improve the condition of the labourer, without at the same time improving his own.

THE AGRICULTURAL LABOURER:

HIS CONDITION AND REQUIREMENTS.

—AS CONSIDERED AT THE RECENT AGRICULTURAL MEETINGS—

I have read in the *Labourers' Friend* a statement, to the effect that 8,000 out of 9,000 of these benefit societies in this country meet in public-houses. In another publication well entitled to belief, it is stated that nearly one-fourth of the adult labouring population of this country are exposed to the temptations of the public-house through the medium of benefit clubs. These monthly club meetings are productive of very great evils, and tend to degrade and demoralize those who are accustomed to attend them. They are usually held on Saturday night, and those who live in the vicinity of the publichouse club well know in a what a discreditable manner the Sabbath is ushered in, to the scandal and disgust of the religiously-disposed, and often to the terror of the wife whom the drunken husband has sworn to love and cherish, but of whom he is too frequently the ruin. These are the outward marks of the system, but you must look to the workhouse, the lunatic asylum, the room of the coroner's inquest, and, lastly, to the judges of the land and the chaplains of the gaols, to see the evil in all its extent. My advice to the inhabitants of Diss is to have a club of their own, and not to associate themselves with any branch societies. Let the intelligent men of the town—and it abounds with intelligence—look into the rates of payment in small and in large clubs, and they will be astonished at the result. All supervision in branch societies is out of the question, because they cannot be reached; and whenever this state of things exists there will be sure to be a tug at what is considered public money. I would also say, take care to insure the medical supervision of some professional man, in whom you have confidence. As for dinners, I have presided over more than one even this year, and, as I preach what I practise, I recommend you to have a dinner at the end of the year. I shall be happy if it is your wish to give you such support as I can, and I am satisfied that if you establish another club it will be on a better footing than before. You will, of course, take care that the feast at the end of the year does not encroach too much upon the funds. These, however, are matters which I should like to see the labouring men doing for themselves. I am in favour of emancipating the labouring man out of leading strings, and therefore I do not like to say much about rendering him assistance. I agree with the good Archbishop of Canterbury that the way to better the labouring man is to make him the agent of bettering his own condition.—Lord ALBEMARLE, at Diss.

He wished to say with what gratification he saw them there as his guests—his honest, hard-working peasantry, who, under the providence of God, had been called to bring in and store up amost bountiful harvest. He thought these celebrations were of great value in bringing together all classes of society—he thought they were of value, to show that they were all dependent one upon another; and that, although he was the possessor of that estate, he could have no enjoyment of it without the good conduct of the honest labourer and peasantry. If they derived any benefit from him, he, on the other hand, derived benefit from them; and, if they had derived any from these good things at his hands, he had received them at the hand of God; he was but the channel for conveying them to his neighbour. Whatever their thanks, he wished them to be offered to the main Source, and that they should only look upon him as the instrument through which any benefit had been conveyed. That was the greatest honour to which a man could aspire, namely, being the instrument, under God, of conferring benefit upon his fellow-man. His lordship then thanked his good, honest, and noble tenantry for their readiness in co-operating with him in a work such as this, and for giving those in their employ a day's holiday, without stinting them in their wages. He then proceeded to observe that he rejoiced they were beginning to revive throughout the length and breadth of the land the good old British custom of harvest-homes. It had fallen, unhappily, into disuse, but was now being revived in many parts of the kingdom. He did hope it would be continued, because he believed such gatherings were of benefit to them all. If any one doubted the good that arose from them, he should wish that person to see the decency of demeanour and the joyous faces of all present. He was quite certain many of them had formed good resolutions that day, and that, as they had been an honour to that estate, and, he trusted, an honour to their Christian profession, so, under the blessing of God, they would continue to be so, and that they would endeavour to perform that which was the highest honour to which they could attain—to do their duty in that state of life to which it had pleased God to call them. However, he did not come there for the purpose of making a long address, but solely for the purpose of telling them how glad he was to see them all—how happy he was to see their order, their decency, and their comfort; and how he trusted, under the blessing of Almighty God, they would join with him in an earnest effective effort to make that estate a model estate, not only for England, but for the whole of the civilized world. Then he was sure if landlord and tenant, employer and employed, those who had property and those who had none—except that honest property of their labour—would join in one great effort to advance each other's welfare and to maintain their Christian character, they would arrive at that condition of things which was the happiest and safest that could be attained in this fallen world. And now he wished them hearty joy. The park was open; there was a band for their amusement, and cricket and other games would be provided. He trusted that at the close of the day they would rejoice that, under the blessing of God, they had had an opportunity, by rational mirth, and by honest sober enjoyment, to celebrate His praises, not only with their lips, but in their lives.—Lord SHAFTESBURY, at the Harvest Home on his estate in Dorsetshire.

I know of no man whom I think better qualified than Lords Leicester to speak on the welfare of the labouring classes. Gentlemen, some of you may have read a speech of his, delivered at a meeting in Norfolk a year or two ago. I well remember reading it, and was forcibly struck by the simple truths conveyed in every line. He said, you cannot materially improve the state of the labouring classes unless you can give them good roomy cottages—that is essentially necessary. Good schools for the young and adult schools are of very great importance, and well-organised benefit societies are a great help; but when all this is done you have only then placed it in the power of the tenant farmer to improve his labourers; and unless the tenant farmers are prepared actively to co-operate with the landlord—unless they bear this object constantly before them—unless they are content to take trouble and spend time in encouraging, warning, and advising individuals around them, your societies will fail, your schools become useless, and no comfort will dwell by the hearths of your cottages. Gentlemen, this is a great and proud responsibility, and happy are those among you who discharge your duties towards them. They are your prop and your stay, and every association should endear them to you. Their grandfathers, gentlemen, have lived, toiled, and died on farms to which your fathers succeeded, and their sons have transmitted to you the race of men who now labour for you with scarce a holiday throughout the year. Oh! then, let it be yours to see that each succeeding generation adds yearly something to the happiness of the labouring man. The vice-chairman (Mr. James Thomas), in a speech this evening, has very gracefully referred to the schools and cottages as being in part the cause of the world-wide reputation which the Duke of Bedford's estate enjoys. It is true, gentlemen, you have the implements to work with; I say, let them not rust in your hands. I was sorry to see by a return which accompanied the last census that Bedfordshire did not stand high in the scale of education, but I trust we shall soon improve in that respect. But the happiness of the labouring class depends not solely upon schooling, and I am happy to say that I believe the poor of our county are well cared for and contented in comparison with those of other counties. I am proud to know some tenant farmers—and I believe and trust there are many more—who have that spirit which I have endeavoured to point out as the mainspring of the welfare of the labouring classes.—Mr. WHITBREAD, M.P., at Woburn.

He condemned the system pursued by some large proprietors of eradicating the poor from their own parishes, and employing labour from adjoining parishes, to exempt them from the payment of poor rates. That was a part of their system which required reform. And he hoped they might live to see a new system in assessing the poor rate—parishes in a larger area—or a minimum rate fixed for parishes. That the labourer, at the present time, was sufficiently paid he would not deny. He was paid enough for the support of himself and family, but that was all. It was impossible for him to lay by anything for sickness or old age. It was true that many labourers possessed allotments in the county, and he believed it was owing to that that many a week was passed by the labourer when ill in his own house, instead of in the poor-house, and he believed that he was under the mark in saying that thousands a year were annually saved to the rate payers by these cottage gardens. If it were true that this system worked well, why not carry it out further? He knew he should be met by persons who would say that an extension of the system would turn the labourer into a little farmer—make England resemble Ireland—instead of depending upon his master's work. He knew, too, it was urged that such a course would make the labourer indifferent and indisposed towards his employer; but would it not be possible to meet that objection by the farmer, instead of the landlord, letting land to the poor whom he regularly employed? The man would become thus more dependent upon the farmer—dependent for his labour and his garden.—Lord HENLEY, at Northampton.

Their noble chairman (Lord Henley) had alluded, in his proposition for larger allotments to the labourers, to the experience of Ireland. He could only say that, as far as that plan had been tried in Ireland, it had long been considered by eminently practical men as one of the greatest curses and drawbacks to the advance of farming in that country, insomuch that Parliament had legislated against it in what was known as the Sub-letting Act. He doubted also whether such a system would work well in England. But he did not doubt the willingness of landlords to devote as much land as was necessary for the object in their various parishes. With regard to the present condition of the labourers, he did not think they had now much to complain of. If provisions were high, wages were high also, and the labouring class, above all other classes, were the objects of a solicitude for their welfare which had hitherto found no precedent in this or any other country.—Mr. STAFFORD, at Northampton.

It was a subject not to be regulated by Act of Parliament. It must be met by supply and demand. There were, however, ways of improving the condition of the labourer—one of them by task work, which he thought had not been sufficiently considered by tenants. The labourer, by task work, would earn greater wages, at a less cost to his employer. As to the condition of the labourer generally, he was not in a bad state at the present time, and he believed that if landlords and farmers would do all they could to improve his condition, he would rise in the social scale as rapidly as other classes. He indicated improvement in cottage dwellings as a means of raising the agricultural population, and quoted, with gratification, the commendatory remarks of a Prussian minister whom he had once the happiness of showing over a district in which the cottages had been improved. He also disagreed with the chairman's (Lord Henley) views upon the allotment question. He believed it was impossible to take the labourer with benefit beyond his weekly wages, but he strongly advocated persevering efforts to make young labourers good at all branches of work, as not a man of them but would then be able to earn more than he now did. He expressed his conviction that there never was a surplus agricultural population in England and never would be, and spoke of the many applications which, during years past, had been made to him from all parts of the country for efficient, sober, and honest labourers; many, whom he had been the means of sending, having received increased wages of five, six, seven shillings a week.—Mr. Beasley, at Northampton.

His own conviction was that, be the future price of corn what it might, the wages of labour would increase. He drew this conclusion from the fact that their young lads were being drafted off into mechanical trades, which must tend to shorten the supply of labour when the present race of men should be laid aside. This, however, would tend to improvement, for if farmers had to give higher wages, labourers would be able to pay larger rents for cottages, and better cottages would be built to supply the demand.—Mr. Bearn, at Northampton.

He alluded to this subject with the more pleasure, because several influential landlords in this county had taken great interest in it, and had improved the dwellings of their labourers to a very considerable extent. It was one of vital importance; for all in vain did they build schools, all in vain did clergymen preach morality and reverence to God and duty to parents, all in vain did the schoolmaster teach order, and decency, and decorum, if the wretched scholars, when they returned to their homes, found themselves in wretched hovels—disgraceful abodes of misery and filthiness—hovels, in comparison with which a well-ordered pig-sty is a palace, and in which a man would have feelings of compunction in sheltering his horse. He would not draw a picture of the miserable loft upstairs, into which a large family were too often huddled together, without the slightest regard to the commonest decency of life, and which was doubtless a great cause of the frequency of illegitimate births, of which they complained as one of the greatest evils of the county. If the labouring man had a comfortable house and a cheerful fireside, to which he could retire when his daily labour was done, it would do much to attach him to *home*, and prevent in some part, if not entirely, his spending his time and his money at the beer-house and the cider-house, where alone, in his present state, he could enjoy comfort.—Archdeacon Lane Freer, at Hereford.

The Archdeacon of Hereford had made a powerful appeal to them, on their duty in promoting the domestic happiness and comfort of their labourers, and fostering the decencies of life by increasing the accommodation of their houses. Now, he must tell them that he had large mining and manufacturing establishments, besides being a cultivator of about 1,000 acres of land, and he found that there was a spirit of independence springing up among the industrial classes that expected and required that the decencies of life should be provided for them by those who employed them. When labour was scarce the good workman would serve that master who took the greatest care of his moral and domestic comforts, and therefore he cordially seconded the appeal made to them by the Archdeacon as to the improvement of the dwellings of the labouring classes. As to the question of celebrating harvest home, which, thanks to the activity of the press, had been taken up latterly, all seemed to think that this would afford a good opportunity to the master and the workman, the labourer and the employer, for an interchange of communion among themselves, and after such a bountiful harvest as we had this year been blessed with, could there be anything more seemly than that we should at its close make its celebration, if not national, at least parochial? Would there not be something impressive in the rich and the poor meeting together in the temple of religion to give thanks for the blessings vouchsafed, the wives and children participating in the grateful return of thanks for the blessings of a gathered harvest? The rest of the day might be devoted to the practice and encouragement of manly and athletic sports.—Mr. B. Blakemore, M.P., at Hereford.

The prosperity of the labourer is especially important to the farmers of England, for without their labours their own efforts would avail nothing, as it is by the thews and sinews of those labourers the soil is enriched; and I believe Colonel Herbert will say they furnish the best recruits in the English army and navy. At present their condition is much more attended to than it was some years ago. Friendly societies are much more general amongst them, and saving's banks have been established, where a short time ago they were not known. I am glad to say that in those places where they have been tried, they have been attended with the greatest success. A few years ago I was very much pleased to hear that the saving's bank in Ludlow was so rich that they did not know what to do with the money. This, I think, speaks volumes for the labourers and other classes who are generally depositors in these banks. There is another thing to which I wish to refer for a moment, and I am aware it is a very difficult and delicate subject: I refer to the labourers' dwellings. I will be frank with you, and tell you my experience. I have tried various styles of cottages, but I have always made it a *sine qua non* that each cottage have three rooms; for without that number, I do not consider a married labourer, who rears a family to the age of sixteen, at which age they are presumed to go from home, can bring them up with proper decency with a less number of rooms. At the same time, I must say, that it is impossible to build these cottages—at least, I have found it so—as they shall pay a fair interest of money; for instance, it costs £120 to build the cottage I have described, the fair interest upon which would be five or six per cent.—a rent which it is quite impossible you can get. But notwithstanding this, I will tell you how I think it pays; and for this reason I am determined to continue the plan. If it does not pay you in actual rent, it pays you in the character of the occupants—in the class of labourers you thus obtain. No man who has ever lived in a cottage of this sort, with a good garden, would afterwards go to live in a hovel. The farmer has therefore a great hold upon his men, which is a great advantage.—Colonel Rushout, M.P., at Ludlow.

He could not allow to pass unnoticed the honourable sentiments expressed by Colonel Rushout upon the labouring classes, and especially with reference to improved dwellings. It was quite true that the landlord would not be able to get good interest for his money in building these improved cottages; but when he built barns and cow-houses he did not expect interest. Good cottages were as essential to the good management of a farm as good buildings. If the labourer had a long way to walk before he came to his work, it was impossible that he could do as much as if he were on the spot. In some counties—though he was glad to say not in this—cottages were considered an encumbrance, and were removed to the adjacent towns. This he considered wrong, for several reasons. In the first place, we had no right to enforce what was unpleasant upon a neighbour by causing him to remove; and in this as in all other cases of dishonesty the evil recoiled upon him who did it. He believed that farmers generally were kindly disposed towards their labourers, and after a good and faithful servant had been many years upon the land they were always willing to support him.—Mr. SMITHIES, at Ludlow.

He thought that, as a society, they might do a little more to encourage the practical part of labour in the county, and that if they were to introduce some prizes for thatching, hedging, ditching, and other work, in which all must acknowledge their labourers to be somewhat deficient, they would be augmenting those benefits which the society was in other respects producing. They ought to do all they could to extend the practical knowledge of their labourers, not forgetting the improvement of their moral and social position; to give them a good education, so as to fit them for the duties expected at their hands. They should teach their labourers not only how to do their work, but give them right motives for doing it; teach them obedience to the "King of kings," and that would make them loyal subjects of the Queen; teach them obedience to the "Lord of lords," and they would be faithful servants of their earthy masters. The more they improved the moral and social position of their labourers, so much the more intelligent would they find them in the prosecution of their work, and the more satisfied would they be with that work. There was one matter, in respect of which he wished to express his earnest conviction that an alteration would be a great improvement. So long as farmers paid their labourers in drink instead of in money, it could not be expected that they would perform the work they ought to do. How could they expect that a man who receives one-fifth or one-sixth of his wages in drink would provide respectably for his family? He knew that many farmers were disposed to view this matter in a different light; but his own conviction, after three years' experience in this county, was that the abandonment of the practice would be the means of conferring great benefit on the labourers.—Mr. THOROLD, at Ledbury.

The social position of the labourers was not so satisfactory as it should be. Drink was the thing which, he must own, he abominated; it induces a man to neglect his home; it makes him, if he might use the words, greedy and avaricious; his bargain was, not how much wages he should have, but how much drink he could get. There never could be a better opportunity for breaking through the prevailing practice than the present, when unfortunately there was a failure in the apple crop. Mr. Thorold said that many farmers disagreed with his views; he did not think that was really the case. He had spoken to many of them, and their answer had been, "If we could get our neighbours to do the same, we would willingly break through the rule." A little co-operation and union, therefore, seemed to be all that was required.—Mr. BIDDULPH, at Ledbury.

As respects the labourer I feel that these societies are most especially beneficial; they show our sympathy for our labourers, and by encouraging and inciting him to increased skill he rises higher and higher in his business. It is our imperative duty to do all in our power to raise what are commonly called the lower orders, but what I choose to call the working classes of this country. Let us give them more light, let us give them education—practical education, and what the excellent Lord Ashburton called a knowledge of common things; and I believe that such a shower of practical benevolence will ever bring forth a rich moral harvest. The seed may be long in the ground before it grows, but it will grow and will bear fruit, which will be the advanced skill and increased intelligence of your work-people.—The Rev. E. F. BEYNON, in East Surrey.

It is perfectly obvious that the success of our farming operations, and indeed not only that, but the comfort of ourselves greatly depends upon the prosperity of that sturdy, useful, and indespensable class—our agricultural labourers. I think the farmers of this district have every reason to be satisfied with the position in which they stand with regard to agricultural labour. I think our farmers may not only congratulate themselves upon the abundant harvest we have lately enjoyed, but also upon having a sufficiency of labour to house it. I believe there has been no well-founded complaint of a want of labourers. A short time ago I was in the north of England, and when I asked a farmer why he left his grain out when it was ready to be carried, he replied that from the want of hands it was cheaper to run a little risk and wait a short time, than to pay 5s. a day for extra men, or 3s. 6d. and find them food. Now, the circumstances are very different in this district: not only have we a good supply, but our agricultural labourers behave themselves very much to the satisfaction of our farmers, and I am glad they stand well with relation to each other. Of course it cannot be said that there are no improvements to be made, or no changes that would be desirable; but I believe the very high compliment which has been paid them by the High Sheriff, namely, that this county stands before all others with respect to the small amount of crime committed in it, is quite deserved; and when we recollect that agricultural labourers is the class which chiefly composes our criminal list in the rural districts, we have the greatest reason to wish for their prosperity. But, while I am glad that this is the case with respect to crime, and while I believe labourers behave with proper respect to their employers, perhaps we cannot say so much of their morals. It is, however, right to say that the dwellings of the poorer classes do not always admit that decent separation of the sexes which we must all desire to see. Nor, perhaps, can we praise them much for their sobriety. There is however considerable temptation to our poor population. Those who live upon our broad open hills are exposed to a good deal of hardship; although of course this cannot justify the want of sobriety we occasionally have reason to deplore. If we had a discontented population whom it were very difficult to keep in order, we should then at once see how much our comfort depends upon this class. Happily this state of things does not exist, but we are living comfortably and harmoniously together. — The Rev. G. F. LEWIS, at Radnor.

If they were to have skilful, orderly, moral labourers, more care must be given to the question of habitations. It was the proper business of societies such as theirs to recognise this most important duty—to prepare the way for making proper provision for the dwellings of labourers, by the strength of whose right arm riches were extracted from the soil. But if he spoke of duties to labourers, he would also add a word as to duties due from labourers to their employers. No class of men desired to act more fairly by their dependants than farmers. That was proved by the existence of this very society. They ought, therefore, to receive from their labourers a corresponding return. Labourers should do the best they could for their masters, whether their master's eye was upon them or not, and render them good and faithful service in whatever department they might be engaged.—The Rev. Mr. Roughton, at Wellingborough.

In a small society like that, the chief object was the improvement of the labourer. He had no wish to make a long speech, but he might be permitted to express his opinion that in that district the labourer was cared for; that, taking the rate of rent and provisions into consideration, the labourers of that district were paid well. It was true that in more thinly-populated counties higher wages were paid, but there were drawbacks in the shape of higher rents, &c., and he could not resist the conclusion that the comparative condition ot the labourer—not positive, for after all it was a hard lot, to sweat and toil all their days, with an uncertain position at last—had reached in this county as great a degree of prosperity as was possible under the circumstances. Last year he was in a district not forty miles from this county, though not in it, where the farms were let at low rents, and prices of produce as high as now, but the land was badly tilled, the hedges wild, the cattle under-fed, and the labourers in the receipt of only 8s. to 9s. a week. When he saw that state of things, he could not help congratulating himself that he did not live in a part of the country where farmers took immediate advantage of a fall in the wheat market to lower their labourers' wages.—Mr. Sartoris, at Wellinborough.

A man walked eleven miles, or thereabouts, in executing a day's ploughing, and if he had to walk three miles to his work and three miles back at night—as many labourers were compelled to do—the unfortunate fellow had to do pretty nearly nine days' work for six days' pay. If such a man worked industriously and honestly for 50 years, he had also the supererogatory work of walking three times round the whole circumference of the earth. He could not show more clearly the great injury which the present system produced to the employer and the labourer than by drawing their attention to two cases which should be fictitious ones, but yet two cases which would put the thing exactly in its proper light. First of all he would take the case of poor John Luckless. For some reason or other he could not get work close at home, and he was obliged to hire himself to a Mr. Distant, a gentleman who farmed the farm of Faraway House. The business went on for some years as straight as a crooked business could. Every morning he walked his three miles out, and every evening his three miles back again; but dear times came on, John had no garden—if he had had one it would have been of no use to him, for he spent all his extra time in journeys between Fraway House and Dust-hole Alley, where he lived—and bread was his sole dependence. He did as well as he could for his wife, his children, and himself, but the club was stopped, the school was stopped, the new frock was stopped and candles and fires became luxuries instead of the necessaries of life. That was not all. Sickness knocked at the door, a most unbidden guest: the little child laid its fevered head upon its mother's lap; the candle must be burnt at night, debt crept on, there was a bill at the baker's and at the shop, and whenever he thought of what he owed, it made him exceedingly unhappy, for he saw the county court and the prison in the distance. He had few friends; his master was a worthy man, but he knew very well it was as impossible to look after labourers three miles off as it was to look after a farm three miles off. So the poor fellow went from bad to worse. He returned to his home of misery where few friends came to visit him—for he must be a friend, indeed, who would go to Dust-hole Alley, a miserable place where the air was redolent of the odours of cesspools, and everything was horrid and wretched—and where he found only his sick child and wearied wife. All these things determined him to go to the beer-house to enjoy himself for awhile. If he became a drunkard and was lost in the gulf of pauperism at once, or if he ran away and deserted his family, or if he became sick himself, then the Union stepped in and gave him that support which it could not render before. They then gave him all the necessaries of life, and if he died they buried him, and pensioned his wife and children; and they had to do all this from the want of a little care in the beginning. Such instances as these were frequent in the Union, and although there were great exceptions, it was right that the ratepayers should be alive to them. He begged pardon for having saddened them with such a gloomy picture, but it really was a wholesome dose of physic, which he had taken himself, and which he hoped would do them all good. If he had exaggerated or mis-represented the thing, he hoped they would pare it down to the wholesome dimensions of truth; at any rate let them think of it and do their best. He would now turn to another case—that of James Lucky, who was hired to Mr. Tillwell, a good master, who would have a good servant, and who took care that not only his farm should be neat, but that James should be neat also. In his extra time James could attend to his garden, and garden-stuff was very useful in a family. When high times came, the old frock was still used instead of a new one, but it was neatly mended; the club was not dropped; and as he liked his children to be at school he made a pinch to keep them there. When sickness came, a ministering angel came also; the master was daily informed of what was going on in the cottage, and many a nice little thing was sent by the kind mistress. Not only was many a good thing given, but many a kind word and a little of that good gift of sympathy, so blessed to those in need of it. All this arose from the fact that James lived in a place where he could be under the eye of his master.—Mr. Rolfe, at Docking.

It cannot be denied but that we are very deficient both in the number and in the quality of the cottages for agricultural labourers. There is many a farm without a single cottage upon it, and many a labourer now residing in hovels in which we should be sorry to see our dogs housed. It is useless, gentlemen, for us to drink their good health if we compel them to walk 3 or 4 miles to their work in the morning, and as many back, after the toils and labours of the day. It is useless for us to toast them if we permit the wintry wind to whistle through their latticed walls. It is useless for us to drink their good health if, when the labourer rises in the morning, he finds his bed and the beds of his children covered with December snow; and I quite agree with Mr. Benson and Mr. Taylor that it is useless for us to preach morality to them, if we compel fathers and mothers, sons and daughters, to dress and undress, and sleep in the same room. No wonder, as long as this continues, that the class of applicants for relief, which it is the most painful part of the duties of guardians to deal with, should be on the increase. But I may be told, as I have been told, that cottage property is bad property, that it pays no per-centage; but, gentlemen, this is a question that should not be looked upon as a matter of pounds, shillings, or pence. "Freely have you received, freely give." Before you can let your farms, you are obliged to build a farm-house; and if you wish to secure a tenant with capital, it must be a good house. You are obliged to build a stable for his horses, a house for his cows, a sty for his pigs, and a barn for his corn, and I apprehend your returns for this outlay are not very great; and shall we pay more attention to the housing of our cows and our pigs than to the comforts of our fellow-creatures?—Mr. EVAN DAVIES, at Bridgnorth.

As regarded the morals of the labourer, it was his opinion that they might preach to him and educate him as much as they pleased, but unless they gave the man the means of carrying out proper morals in his own house, all the education and preaching in the world would be of no use. The preaching would be heard but once in the course of a week; but the influence of the home would be exerted every day. He was satisfied that no landlord could be better employing his money than by giving his labourer a comfortable home.—Mr. TAYLOR, at Bridgnorth.

Though he had not long been residing in Dorsetshire, there was one thing which had naturally impressed itself on his mind, as it must on the minds of every one around him—that was the necessity which had been recognized of providing proper cottage-accommodation for the labourer. A few years ago, when he was not acquainted with Dorsetshire, he heard a great deal said about the bad accommodation for the labourers in this county; but he must say that since he had been in Dorset he had come to the conviction that either Dorset had been most foully libelled, or that a most astonishing improvement had taken place in that respect. Of course, there might be cases where it was otherwise, but he was now speaking as trustee for estates of some magnitude. It was impossible, he knew, when they talked about these improvements, that they should build new cottages over the whole county; but they should improve where they could, and not lose sight of certain main principles upon which cottages could be built as cheaply as if those principles were disregarded. He meant especially that in building cottages they should avoid the dreadful and pernicious habit which had prevailed in some counties—he hoped not so largely in Dorset as in some places—of herding the sexes together in one large room. It was infinitely better to build two small rooms than to huddle them together in a large one. This was a point in which they could improve the comfort of the cottager without going to the immense expense of remodelling all the cottages on an estate. In building cottages also, how easy it was to arrange them so that one room should not be a passage for another; so that the labourer, in going to his work early in the morning, should not have to pass through the apartment in which the women and girls of the family were sleeping.—Mr. FARREN, at Wareham.

Complaints were often made against village public-houses and beer-houses; he was not standing there as the advocate of those places, but he would ask what it is induces a man to go there?—not his love of drink; that would be a libel on the character of the English labourer. He went where there was a warm room and blazing fire; he enjoyed no doubt his cup of cider or glass of beer, but he enjoyed also the conversation of his neighbours—he liked to hear the news of the day read out from the provincial paper, and he obtained there what he ought to be able to obtain at home. Surely it was matter of regret, or rather reproach, that in these days of boasted education so little was done in this respect. Anyone who travelled could note the improvement in the culture of the land—fields being drained—hedges levelled—new fences planted—useless trees rooted up—waste land brought under cultivation—new farm-buildings erected—the sheds for cattle well drained, ventilated, and sheltered—and the animals enjoying not merely comfort but positive luxury. But when they turned to the dwellings of the poor—of those by whom these animals were attended—what did they see? Cottages perhaps picturesque—in appearance perhaps worthy of the artist's pencil—but wholly unfit for the residence of human beings; and when they saw how families were huddled together in them, they could not feel surprised that immorality and profligacy existed among them. He thought it a matter of reproach that, when the animals were thus attended to, so little was done for the labouring poor.—Mr. T. HOSKYNS, at Chard.

Ireland is progressing rapidly in every respect. At the petty sessions courts throughout the country there are now few, if any, convictions. If we look to the quarter sessions courts, what do we see? They are reduced in number, in consequence of the little employment that is to be had even for the officials; and if we go to the assizes, instead of the judges, as heretofore, haranguing the grand juries upon burglaries, burnings, murders, and conspiracies to murder, we find them merely lecturing road-contractors against the mis-spending of the public money. In the absence of crime Ireland at this moment presents a most flattering contrast to her former condition; nor do I think that there is at this instant a country in Europe in which life and property are more secure. While the jails are empty the schools are full. Civilization and education are progressing among the youth of the country. I am also happy to say political animosity and religious rancour are diminishing among the adult population, and all parties are beginning to perceive that in combined exertion and mutual co-operation they can best promote the public good, and in so doing best advance their own interests. With this social amelioration physical improvement is also progressing. The farmers are now well clad, and well fed, and have plenty of money. The labourers receive good wages, and, I believe, the landlords receive good rents; and, gentlemen, there is only one respect in which I believe that the country is stationary—and though it may be somewhat tiresome, perhaps it will not be out of place for me to allude to it here—I allude to the residences of the peasantry. It would be very hard to convince a stranger coming amongst us that this boasted improvement had taken place in the country where he sees the dung-hill before the door, damp and dirt upon the floor, and filth in the thatch; and, gentlemen, this is a state of things which should never exist, particularly in this part of the country, where you have slate in every quarry, and fir timber in almost every bog, and where comfortable slated cottages could be substituted for the filthy thatched hovels that at present exist. I believe all farmers will tell you that even in an agricultural and economical point of view, it is a matter of importance. All farmers will tell you the straw should properly belong to the farmer, and it would be better employed in making comfortable bedding and comfortable feeding for the cattle than in dirty roofs for the owners of the cattle, and in an economical point of view nothing would promote the public health so much as comfortable dwellings; while it would be far more economical for the proprietors to prevent diseases by such modes than to pay doctors in workhouses and dispensaries for the cure of them.—Dr. DONOVAN, at West Carberry.

There were two points he would allude to—they were, the dwellings of the farmers and of the labourers. Several of the farmers had comfortable dwellings that were creditable to them, but others were a disgrace to the estate; and this arose not from want of means, but want of inclination. The farmers should improve their own habitations, and the cottages of the farm labourers subsisting on the land. The condition of the labourers was a subject that occupied much of the attention of Lord Waterford, and his excellent lady extends her attention to the cottier class. The labourer was entitled to a comfortable home, and the tenant who would not assist those under him would come with a bad grace to ask assistance from his landlord. He would tell them clearly that he would withhold any favour from the tenant, unless he treated his labourers as he expects to be treated himself. — Mr. ROBERTS (the Agent of Lord Waterford), at Portlan.

I have ascertained from much testimony which I have had official occasion to take, that in the district of small farms and cottier allotments, under conditions which impair or prevent the advantageous application of the energies of the Irish labourer, the *working hours of his days*, or the efficiency of the labour within the hours of his days, are reduced to one-half those of an English labourer, and indeed of an Irish labourer in England, under more systematised direction; that from holydays, saints' days, attendances at meetings, at law-suits with which he has nothing to do, or at markets where he has nothing to sell, the *working days of his year* are reduced to 200, or to one-third less than those of an English labourer; that from his residence in a mud hovel—himself and all his family, and commonly his pig, in the same room—damp, fifthy, and unhealthy, the *working years of his life* are reduced by eight or ten years, or nearly one-fourth less than those of an English agricultural labourer in a moderately healthy English county; and from the excessive sickness, and the premature mortality of the adult or productive hands, a greater amount of pecuniary charge for the support of a larger proportion of dependent children, orphans, and of dependent hands, is charged upon the reduced produce of his reduced working hours, days, and years.—Mr. CHADWICK, at Brussels.

RISE AND PROGRESS OF THE INDUSTRIAL RESOURCES OF THE UNITED STATES.

No. IV.

At the declaration of independence, the American Union consisted of only thirteen States, of which seven contained slaves. There are now sixteen free States, and fifteen in which African bondage is recognised. This balance has always prevailed, with slight oscillations. At the commencement of the War of Independence, in 1775, the population of the thirteen colonies has been variously estimated; but it appears to have consisted, at least approximatively, of 2,000,000 whites and 600,000 blacks. From 1790 to 1850, when the last decennial census was taken, the total number of immigrants from Europe to the United States has been computed at 2,760,529, and their natural increase in periods of ten years at 1,590,605; so that the number of immigrants and their descendants in sixty years may be put down at 4,351,134. The census of 1850 thus enumerates the different races composing this mixed population:—Anglo-Saxons, 11,000,000; Lowland Scotch, 700,000; Scotch and Anglo-Saxon Irish, 1,500,000; Celtic Irish, 2,000,000; Welsh, 300,000; German, 2,000,000; Dutch, 800,000; French, 1,000,000; Danes and Norwegians, 100,000, Swedes, 100,000; Swiss, 50,000; Spaniards, Italians, and Jews, 100,000—total, 19,650,000 whites; Africans, slaves and whites, 3,600,000.

One of the first acts of Congress was the settlement of the Western territory. In the grants originally made to the different colonies by the British Crown, no Western boundary had been defined. The majority of the newly-created States insisted that their land stretched out to the Mississippi, and even to the Pacific Ocean. Virginia had over a vast region the right of conquest, Colonel Clarke and a small number of Virginians having seized some English posts lying between the Ohio and the Mississipi. During several years no arrangement could be made which satisfied all the States; at length, in March, 1780, the State of New York ceded its rights to the federal government. This act was soon followed up by Congress making an appeal to the patriotism of the other States to imitate the example, pledging itself that whatever was given up should become a NATIONAL DOMAIN, and be appropriated to the formation of New States, on the basis of those already in existence. In 1784 Virginia, whose title to retain what it had conquered was indisputable, surrendered possession on terms which Congress accepted. In 1785, Massachusetts yielded its pretensions. In 1786 Connecticut did so likewise, reserving, however, a considerable tract of country now occupied by the State of Ohio, which, at a subsequent date, it sold to the Union. The two Carolinas next yielded their shares. Finally, in 1802 Georgia abandoned its claims, on condition that the federal government would expel the Cherokee Indians from her soil—not, indeed, by force of arms, but by negotiation. This plan succeeded. Thus a vast national domain was occupied, which was extended in 1803 by the purchase of Louisiana from France for 15,000,000 dollars; and the Floridas from Spain, in 1819, for 5,000,000 dollars. The United States also bought from the Indians some lots which those Red Men held within the States and the domain. At first Congress sold these lands in large parcels. In this manner three great sales were made, including 1,397,500 acres; and some smaller ones, amounting, in the aggregate, to 125,000 acres. On the 10th May, 1800, the system of land sales was adopted, which still exists with some few modifications. We shall describe its principal features.

At the cost of the Union, a geometrical plan is formed of the country, and a proper boundary is fixed. The most considerable lot is the TOWNSHIP, which contains a square of six miles, its superficial area being 23,040 acres. The township is divided into 36 squares, measuring a mile on each side, covering 640 acres. These sections are divided into quarters, each of 160 acres; and these again into half-quarters, each of 80 acres. Most of the farms in the new States of the North-West are of the dimensions of quarters and half-quarters. The different divisions are numbered, and are easily distinguished on the plans and on the ground. The lands are offered by auction to the highest bidder, the minimum from which the biddings start being one dollar and a quarter per acre. Every year some forty townships are thus dealt with in each land-sale district. What is not disposed of by public auction (and it is always the greater area) is sold in the land offices to any one willing to buy, the minimum price being there also fixed at a dollar and a quarter per acre. Land containing salt pits or lead is not sold, but retained as the property of the Union. Up to 1820 these sales were effected on the credit system, which gave rise to a gambling spirit, from which many losses ensued. From that period cash payment was enforced as a rule, but practically there are some exceptions. Formerly, many persons used to locate themselves on land which they had not purchased, either because it had not been put up to auction, or because they looked to acquire a title at a postponed date, or keep possession without any payment at all; they were called SQUATTERS. They were at the mercy of speculators who might purchase when the land was put up to sale, and such purchasers of course acquired a legal right to expel the squatters from the land they had reclaimed from the waste. This has taken place in some cases where the squatters had not the means of satisfying the demands of the speculators; but, in general, the latter avoid the collision or dispute, as they have often been received with a loaded musket. The squatters, however, have the right of pre-emption at private sales.

In each township one section, that is one square mile, is reserved for the benefit of the primary schools of the districts; moreover, on the produce of the sales five per cent. is retained, of which three per cent. is expended by Congress on the construction of roads; the remaining two per cent. is paid over to the State in which the lands are situated, as a fund to promote education. Since the establishment of the National Domain system, enormous funds have been paid into the Treasury from the sales of land, and it is always a sure reserve to cancel a national debt. It would occupy too much space were we to give the statistical returns from the commencement; it is sufficient to state that a continuous revenue is derived from this source, and in the years 1854-55 a sum of 9,285,533 dols. accrued from a sale of 7,035,735 acres.

The different States of the American Union were isolated from each other under colonial rule: each had its separate government. When they had achieved their independence, each acquired for itself individual sovereignty, which has never been merged in the collective sovereignty of the united federation. Those two sovereignties co-exist without being confounded, though they have sometimes been exposed to temporary collision. All the new States have been founded on the same principle. Each governs itself absolutely within its own boundary, frames its own laws, appoints its own magistrates, votes its own taxes, and appropriates them as it pleases. Each is only bound to observe certain general principles of individual liberty and of public law embodied in the federal constitution. The authority of the federal government only extends to foreign affairs, and there it is absolute, as no single State can make any treaty or engagement with any foreign nation. The custom-houses, the post-office, the mint, and the regulation of weights and measures, are under federal control. The federal government alone can make war or peace with all nations, and even with the aboriginal Indians. It commands the army and navy, and prescribes rules for arming the militia in time of war; but during peace each State rules its own militia. It also has jurisdiction over what concerns external trade and navigation. It may contract loans and impose direct or indirect taxes to meet federal emergencies. As already remarked, it receives the proceeds of the land sales, with the exception of the small per-centage mentioned. The post-office is not considered a source of general revenue, as in England; the finance minister is content if the receipts balance expenditure, which, however, seldom happens, for postal accommodation is constantly extending itself even into thinly-peopled districts, where postage is of course infrequent and unremunerative; but as the policy of the Government is to regard the post-office as an auxiliary to trade, its deficiency is made good out of general revenue. Thus in 1854-55 the expenditure amounted to 8,710,907 dols., the receipts being only 6,955,586 dols.; showing a deficit of 1,621,838 dols.; but this was less than in the preceding year. The figures of the postmaster-general, in the years referred to, give an augmentation of 1,494,463 miles over the preceding year in the total lines of road traversed by the mail. In such an immense territory it is obvious that a large outlay must in the first instance be incurred in the formation of roads before a paying population can become resident; thus the post-office department must always be in advance in its disbursements for many years to come, since effects cannot precede causes. However, the general finances of the United States are in a most flourishing condition. In 1853, Mr. Guthrie, the Minister of Finance, complained that his receipts were so much in excess of his expenditure, that he was troubled to know what to do with his balances. His embarrassment must have been extreme in 1854, when the credit-side of his account showed an additional three millions over that of 1853. He received 95,492,595 dols., and all the demands against him were but 75,354,630 dols., leaving a surplus of 20,000,000; and it may be observed that among the six items of expenditure 24,000,000 dollars appear as appropriated to the extinction of the national debt, which is equal to one-third of the whole year's outlay. It will make the matter clearer if we give the several items of the budget.

Civil list, salaries of the Presidents, Ministers, and Congress	4,649,384 dols.
Foreign affairs	7,726,677
Various disbursements	13,531,314
Department of the Interior	2,609,054
„ War	11,993,629
„ Navy	10,765,192
Purchase of National Debt	24,336,380

This excess of receipts over expenditure must increase from year to year, as the commerce of the United States extends itself, for, in a corresponding proportion the customs' duties, which are the main source of revenue, must be augmented. In Mr. Guthrie's Report for 1855, taking the returns of 1854 as the basis of his estimates, he calculated on a surplus of 19,762,050 dollars; and this he again proposed to apply to the reduction of the national debt. It then amounted to 67,340,628 dollars; at the end of 1854 it was reduced to 47,180,506 dollars; and is, of course, in a rapid state of extinction.

Of the Federal army and navy this is not the place to speak, as our province is confined to American industry; but under that head the commercial marine is included. According to the statistics of 1853-1854, there were built in the dockyards of the Union 264 ships and barques, 69 brigs, 435 sloops and cutters, and 121 steamers, the total measuring 340,000 tons. The aggregate tonnage under the American flag at that period was 5,971,623 tons, of which 2,333 ships were employed in foreign trade, 2,622,114 tons in coasting, 146,965 in the cod fishery, 186,901 in whaling, and 677,613 in steam navigation. This tonnage is constantly on the increase.

Art, assisting nature, has drawn to fixed centres the very extreme boundaries of this immense territory, and given to it compactness of form, and almost unity of action. Navigable rivers, a system of canalization by which those rivers are connected, inland lakes of the dimensions of seas, a network of railways and of electric telegraphs, have conquered time and distance. The territory of the United States is composed of two principal internal basins—the one of the Mississippi, the other of the St. Lawrence, which flow, the former from the north to the south, into the Gulf of Mexico, the latter from the south to the north, into the Bay of St. Lawrence. Externally, to the eastward, is a system of smaller basins, which discharge themselves into the Atlantic, as the rivers Connecticut, Hudson, Delaware, Potomac, Susquehannah, James river, Roanoke, and others. The Alleghany mountains, called the *Backbone* of the United States, form a natural separation between these two great basins of the interior and the system of smaller basins on the eastern side. To the westward, the valleys of the St. Lawrence and the Mississippi are bounded by the Mexican Cordilleras, which also take the name of the Rocky Mountains. At the foot of this mountain-chain spread out vast solitudes, which will remain for a long period, if not for ever, uninhabitable for men, except here and there an oasis. The American territory may be divided, under hydrographical views, into two distinct regions, the one to the east, the other to the west, of the Alleghanies; or into three regions—the valley of the Mississippi; the valley of the St. Lawrence, with the great lakes; and the littoral, or the Atlantic shores. A more compendious division may be, into north and south, the commercial metropolis of the one being New York, and of the other New Orleans. The social constitution of the south is founded on slavery; that of the north on universal suffrage. The south is the great cotton field, also growing tobacco, sugar, and rice. The north is the great broker of the south, selling its produce to Europe, and supplying it, in turn, with the produce of Europe. It transports its cotton beyond the seas; manufactures its household furniture and agricultural implements, its steam-engines for its sugar-refineries; and feeds it with corn and salted provisions. This industrial and commercial relation between the north and south has shaped the policy of American statesmen in reference to the creation of facilities for internal communications, and induced them to connect the Atlantic shores with the countries lying to the westward of the Alleghanies—that is to say, to unite such rivers as the Hudson, the Susquehannah, the Potomac, the James river, and such bays as the Delaware and Chesapeake, either with the Mississippi and its noble affluent the Ohio, or with the St. Lawrence and the great lakes, as Erie and Ontario, whose waters the St. Lawrence carries to the ocean. They also had to establish communications between the valleys of the St. Lawrence and of the Mississippi—that is to say, between one of the great affluents of the Mississippi, as the Ohio, the Illinois, or the Wabash, and the lakes Erie and Michigan, which, of all the lakes dependent on the St. Lawrence, advance most towards the south. By these processes, the north and south poles of the United States—that is to say, New York and New Orleans—were to be brought into industrial and commercial contact.

BELGIAN CENTRAL AGRICULTURAL SOCIETY.

BRUSSELS, Nov. 8th.—As the opening of the Belgian Chambers is to take place on the 11th inst., the International Free Trade Association established by the Congress recently held in this city, and the other political bodies interested in the proceedings of the coming Session, are actively employed getting up addresses and petitions to the Legislature. One of the most important of those bodies is the Belgian Central Agricultural Society, which numbers amongst its members many of the leading men of the country. Its committee is composed of the most active, intelligent members, who carry on a regular correspondence with similar societies in all parts of Europe.

Belgium being essentially an agricultural country, the question of free trade in corn, as well as in the many other articles connected with the farming interest, is one that holds a most prominent place in the deliberation of this society.

The Government have abolished all duties in respect to the *importation* of corn; but there is a temporary law in existence which may be said to forbid altogether the *exportation* of any of the cereal productions of the country. This law will expire the 31st December, if not renewed in the coming Session; and it is against the continuance of such a law the Agricultural Society, as well as the Free-traders, are now exerting themselves. Their arguments are, that the practical effects of such a prohibitory law are to check production, and to raise the prices of the necessaries of life to the serious injury and discomfort of the industrious classes.

The Ministers, however, have declared their determination to urge the renewal of this law; and as it is announced in the Brussels papers of this day, the subject, as well as that of free trade generally, will form a leading topic in the Royal speech upon the opening of the Chambers, on Tuesday.

An Extraordinary General Meeting of the Society took place in their Hall, at Brussels, on the evening of the 3rd inst., which was attended by a vast number of members.

The first proposition that came before them was one involving a claim to the enactment of a law prohibiting the exportation of bones. This called forth a tremendous opposition, and, after a lengthened discussion, the proposition was negatived by the whole of the meeting with the exception of three voices!

M. Corr Vander Maeran, the able and indefatigable president of the Brussels Free Trade Committee, then submitted the following proposition, viz., "The Central Society of Agriculture agrees to constitute, as soon as possible, a commission to examine into the details of the Customs legislation, with the view of ascertaining how and to what extent the legislation affects the interests of agriculture." The hon. president first referred to the duties on iron, observing that the metal which cost at Glasgow 9 francs, if imported into Belgium was raised to 17 francs and upwards, in consequence of the high duties and the cost attending it at Antwerp. The new law passed last session, but which will not come into operation until next year, will reduce those import duties to 3 francs, which will still afford the iron masters at home a protection of 70 per cent. In reference to the articles of cotton clothing which are chiefly worn by the agricultural population, the protection given to that manufacture, amounts to no less than about 95 per cent. (including the cost of transport). These tissues are *tariffed* by weight, viz., 325 francs the 100 kilogrammes. The agricultural interest has submitted for more than twenty years to this disastrous system, and it is now high time that it should be altogether abolished.

M. Corr Vander Maeran having laid upon the table some samples of cotton cloth called "pillows," observed that those samples did not come from that "perfide Albion," which their adversaries said was a country which would sell to all the world, but would never purchase anything herself abroad. They represented the products of manufacturers who had created an extensive industry without any protection. Those samples came from Rotterdam, in Holland, where similar articles coming from foreign countries only paid a duty of 4 per cent. Those manufacturers had succeeded in rivalling the interior markets of England. The instruments of labour, and the garments used by the agricultural classes of Belgium were, however, charged with prohibition duties from 100 to 150 per cent. Having then reviewed the prominent portions of the *Avant-projet*, or the amended tariff which the Ministers are to submit to the Chambers, the speaker pointed out several grave and palpable errors in the financial calculations, and proceeded to observe that woollen shawls paid no less a duty than 300 francs the 100 kilogrammes: while a splendid cashmere shawl, of the value of 3,000 f., weighing only 2 kilos., paid but a duty of 6 francs, the farmer's shawl, weighing 3 kilos., paid as much as 9 francs upon an article which, perhaps, was intrinsically worth only 30 francs, that is to say 30 per cent. The richest silk tissues paid 500 francs the 100 kilogrammes, which was equivalent to only 4 per cent. Such was the unjust and iniquitous system of levelling the duties according to weight instead of according to value.

The greatest attention was paid to the hon. gentleman's statement, and his proposition was adopted amid the enthusiasm of a unanimous feeling.

In the course of the proceedings, one of the most distinguished members of the society, M. Bortier, after having demonstrated by indisputable figures that the agricultural interest of Belgium paid annually no less than 3,600,000 francs to the producers of iron, it was unanimously resolved that a general petition be presented in favour of the complete abolition of the duties upon iron and oil—articles essential to agricultural industry.

THE CONSUMPTION OF ROOTS.

How can I most profitably consume my roots? is a query which at this season will annually occur to agriculturists of a thinking turn of mind. Must I feed them on with sheep? must I drag them home for cattle? slice them with a Gardner, grate them to a pulp, tear them up in shreds, or give them whole? In absence of any conclusive evidence on the subject, we would rather, in preference to a point blank reply to each or any of the foregoing interrogatives, in the spirit of Sir Roger, believe "that much could be said on both sides."

A great deal will depend how a farmer is locally situated, the nature of the soil he has to deal with, and the system of rotation followed; all of which may indirectly influence him in the manner of consumption. If his soil be light and subsoil porous, and no other local demand for his roots than a purely agricultural one, then, without dubitation, the most profitable manner of consumption is to eat the greater part on with sheep. Should the soil be tenacious, or loam with a non-porous subsoil, certainly the worst use they could be put to would be to soil them. Lands of this description trodden with sheep when wet, are, for a time, rendered useless, and seldom or never recover their tone until deep ploughed in autumn, followed by a well prepared summer fallow.

But we need not take up space in your valuable columns by any long preface: we merely intend to give an unvarnished account of some of the most prevalent systems of feeding on roots—we leave others to draw their own inferences. First, then, we will take the primitive mode practised by our forefathers, and which even yet, in some parts of the country, is somewhat extensively followed—we allude to the practice of consuming turnips where, and as they grew. The labour involved in this mode of consumption is comparatively trifling, much less than by the improved modern way of pulling and cutting; and the whole operation we may very briefly describe. After fixing on a certain breadth or portion of the turnips (locally called a "break"), and the extent of which must be regulated by the intended number of the sheep to be put on, pull four rows or drills of turnips round about the intended "break," which facilitates the setting of the nets, and likewise leaves no temptation for the sheep to get their heads through the meshes of the net to nibble either the tops of the fresh turnips, or the shoots of the thorn-hedge, should there happen to be one along the end or side of the break. A clear space being made all round, a cart is brought up with the requisite quantity of "stakes and nets," which, in going round, lays out a net at intervals of 50 yards, or whatever may be the length of the net; and the stakes are laid out in bundles of about as many as a man can carry on his shoulder. The man then being provided with a "gavelock" (a sort of strong iron bar rounded and sharpened at the heavy end), makes holes at intervals of 8 or 10 feet for the reception of the stakes all round the break. Having completed this, he next shoulders a bundle of the stakes, and walking smartly on, deposits one in each of the holes previously made, all the way round: this finished he gets his wooden "mall," and with a stroke or two fastens the stakes in their holes; next he fastens on the nets, and the break is ready for the flock.

Having the work carried on as described, an active man, and one who knows how, will set a great length of nets in an incredible short space of time. After three or four days, the shells or bottoms of the turnips will want picking up, and, after another day or two, the sheep will want a fresh break, which can be provided as already described, though more nets will be required, as those set round the first break must be allowed to stand until a third break is wanted, to enable the sheep to fall back and pick all up clean, and which if the weather be dry they will to a nicety, leaving nothing but the smallest top roots. We have often with interest watched them while feeding, after regaling for a while with full bite on the fresh turnips, drop back (much in the same manner as a gentleman after dinner amuses himself with his dessert) to the shells, and where, after scooping out and nibbling for a while, retire to rest. By the above mode of consumption, an active man will, with a little assistance at picking shells (say a woman 2 days a week), manage 600 full-mouthed sheep.

The process of cutting and feeding in troughs requires more labour, and consequently entails a much heavier expenditure. In carrying out this system, the first operation is to pull the turnips, cut off top and roots, and cart into heaps of one, two, or more loads all over the field; and this ought to be done when the weather is dry and without frost, so that the roots may be stored in condition, to keep sound during the winter. Some prefer to pull only as wanted for feeding. This saves the cost of filling and carting to the heaps, and in open seasons may be found to do pretty well; but, taking the seasons generally, the adage of "penny wise and pound foolish" might with great triteness be applicable to such niggardly ways of managing. The turnips being pulled and stored, the nets set as before, and immediately adjacent to a row of heaps, the troughs brought into the break (the size of the troughs will be most convenient when large enough to allow six sheep to feed from one), a cutter is brought to the heaps outside the nets, the turnips sliced and put into troughs, and the nets removed as the heaps are finished. And here I may note a neat and economical contrivance, in the way of husbanding power, which I have seen on some of the large turnip farms in Northumberland. It consists in affixing a windmill in miniature to the turnip-cutter, and which, with a very slight breeze, cuts the turnips with great rapidity, and being quite portable, it can, in calm weather, be readily taken off and laid aside, and as readily affixed when wanted.

By the latter system of feeding the sheep have always the advantage of a clean bite, but the extra outlay is considerable, and whether covered by a more rapid increase of weight, we are not prepared to affirm. A moderately active man will, with occasional help in removing troughs (a woman or lad a day per week), cut and remove nets for 300 full-mouthed sheep. The writer has (before he reached man's years) for many a day cut for 380 hogs, and then he considered himself anything but overworked. An active man will, with the help before alluded to, cut and remove for 400 hogs. With the view of comparison, suppose 600 full-mouthed sheep eat $2\frac{1}{2}$ acres of turnips per week, the expense on each of the systems would be as follows:—

I.			
1 man tending and setting nets, per week ..	0	15	0
1 woman, 2 days assisting	0	2	0
Cost per week	0	17	0
II.			
2 men tending 600 sheep, per week	1	10	0
1 woman 2 days	0	2	0
$2\frac{1}{2}$ acres pulling, at 6s. per acre............	0	15	0
" filling and carting..................	0	18	9
Cost per week	3	5	9

Making a difference of £2 18s. 9d., or about 1d. per sheep per week, and this exclusive of the outlay and wear and tear for cutter, troughs, &c., and extra cartage in removing. We would have made some more remarks, and adduced facts, but space forbids, and we may trouble you another time.

Wm. J. M.

THE CORN TRADE OF THE PORT OF DANZIG FOR 1855.

Official Report on the Corn Trade of the Port of Danzig during the year 1855,

By Consul-General Plaw.

In the Returns for 1855, it is shown that the aggregate number of vessels was 1,236, with cargoes, which have left our port. Though this number, compared to 1854, is 225 less, yet it would appear that Danzig has had, on the whole, a favourable season. But from the following statement of the different branches of trade, it is evident that this appearance only exists in reference to some few articles; and even in these the result is far behind 1853 and 1854. This arises from short importations during the year, caused, in great part, by the prohibition of exportation from Poland (which has now existed for three years) of all corn—wheat excepted—as also from the concentration of large numbers of troops along the frontiers, neglected state of agriculture, and the influence of weather—which has been very unpropitious during several harvests—all these causes have very much reduced the import of wheat from Poland, in comparison to other years. The diminution of imports of wood is to be ascribed to a want of labourers.

Danzig has had no share in supplying provisions for the combined fleets this year, supplies being taken from Denmark, &c.; neither has Danzig been concerned in the interchanging and carrying trade on the Russian frontier; and the carrying business to Poland was not improved by the war. It is the earnest desire of shipowners here to acquire the right of transit for salt to Russia.

In the year 1852 an application was made, and the promise was given, that the transit trade in salt should not be prevented. At the same time it was represented by the Government to the merchants, that salt was a monopoly of the Polish Government. Notwithstanding, this does not disallow the transit of salt through Poland to Russia; for the Convention, made on the 19th December, 1818, says: "Though it is not permitted to import tobacco or salt into the kingdom of Poland as objects of *trade*, it is yet permitted to convey them to Russia through Poland, under those measures which the Government of Poland may consider necessary for preventing a smuggling trade." There exists no new Act which abolishes this branch of trade; but there is no doubt that it was not permitted on the Polish border either to import salt, or to carry it through; yet the existing war has rendered it a most welcome article of importation, both in Poland and Russia.

The Pinsk Canal has been during the last twelve months opened for public use by the Russian Government. This canal unites the Vistula, and the Bug, and the Dnieper. By abolishing the border dues between Russia and Poland, the trade on the above line of communication encourages the hope of bringing a closer connection between the west of Europe and the rich Ukraine. The present war, with blockade of St. Petersburgh, Riga, and the Ports of the Black Sea, has proved and encouraged the importance of this new channel, as trade with the products of that country was almost solely carried on by its means. This new junction will also tend to improve the trade of Danzig.

By this opening the importation in 1855 has been about 10,500 qrs. of very fine linseed, which article hitherto has but rarely been shipped from thence; further, about 12,000 cwts. of tallow quickly found buyers for Belgium and England, with good profit; and about 15,000 cwt. of hemp, of which 5,200 cwt. were shipped, and about 10,000 cwt. remained in winter stock. Several thousand quarters of linseed, about 10,000 cwts. tallow were detained by an unusually early winter.

The corn trade of last year has, with few exceptions, not proved successful. Imports were very small in comparison with average seasons. Prices here were mostly lower than at Berlin and Stettin, and sometimes even cheaper than in Poland, and yet as high as in England and other countries, which, with the assemblage of troops in parts from whence this place is in general supplied with grain, raised prices; and large parcels were rather sent to Berlin, Stettin, Saxony, Thuringia, &c.

The export of grain may be considered as ended on the 1st of September. Since then, with the exception of about 5,500 qrs. bought on French account, nothing has been shipped.

WHEAT.—Last year began with high prices, even after the ample harvest of 1854; and in the first months, and while river navigation was closed, large supplies came from inland, and among these most of the cargoes which had been detained by the frost on their way from Poland. The most active period was in the months of April and May, when, after the conclusion of the Vienna Conferences and recommencement of war in the Baltic, it almost seemed as if the ports of Prussia and Pomerania alone had to provide England. In the months of June and July, prices decreased, and there was less demand from abroad. Since August, when the bad harvest of these provinces and Poland became evident, prices increased in spite of low reports from the foreign markets.

The stock on hand and short supplies of old wheat were sold at far higher prices than were quoted from abroad. The new crop is in every respect defective, yields scarcely a third part of an average harvest, and it is little doubted but that the exports next year will be limited to what may be imported from the southern part of Russia.

RYE.—The unprecedented case has happened, that in consequence of a very short harvest, and prohibition of exports from Poland, with an increased general demand, the market here was bare, and it was found there was scarcely sufficient for the consumption of the place. We, therefore, very gladly received importations amounting to about 9,500 qrs. from Sweden and Denmark, which, luckily, arrived before the shipping season closed.

PEAS were also a small import, as there was a very poor yield, consequently prices too high for shipping; and the supplies were chiefly required for home consumption.

BARLEY AND OATS.—The harvest of these two articles was pretty good, and served to replace in some measure the short growth of wheat, rye, and peas. The country consumption large, and prices continue high.

LINSEED.—Some parcels of extraordinary fine quality arrived from Southern Russia, and large imports are expected next summer. Hitherto but little has been cultivated in this neighbourhood.

RAPESEED.—The cultivation of which is yearly increasing. The plant in the spring of 1855 gave prospect of a rich harvest; but shortly before, a continuance of rainy weather set in, so that only one-half to three-quarters of the expected produce could be housed in good condition. About 4,000 quarters were exported; the rest was crushed by oil-millers here.

IMPORTATION OF CORN AND GRAIN IN 1855.

From	Wheat.	Rye.	Barley	Oats.	Peas.	Lin-seed.	Rape-seed.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
Poland & Russia	91733	..	..	..	..	9849	2656
Sweden & Denmark	383	9193	178	..	..	..	..
Inland, by river	51481	16191	1428	5302	2352	420	2793
,, by rail .	38545	16663	6069	273	1953	556	4011
,, by carriage..	10500	7350	5250	2100	1050	105	5250
1855. Total..	192647	49397	12925	7675	5355	10930	14710
1854. Total .	206052	37726	16905	9051	7654	3360	15634
1853. Total..	402822	50599	16149	11340	4095	2163	31563

EXPORTATION OF CORN AND GRAIN BY SEA IN 1855.

To	Wheat.	Rye.	Barley	Oats	Peas and Beans.	Lin-seed.	Rape-seed.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
Britain	114060	..	98	..	2939	2204	4000
France........	2772	..	..	..	178	..	..
Holland	40887	17412	..	..	829	1029	41
Belgium	619	..	..	..	81	8594	..
Denmark	63	..	..	..	..	..	..
Sweden and Norway	137.	294	..	..	13	..	..
America	5	..	..	..	..	..	..
Prussia	..	1560	..	..	..	..	..
1855. Total..	158543	19596	98	..	4043	11827	4041
1854. Total..	236355	19750	199	..	6342	1029	2488
1853. Total..	509460	17871	4326	..	1879	1628	13135

STOCK REMAINING IN WAREHOUSE.

	Wheat.	Rye.	Barley	Oats	Peas.	Lin-seed.	Rape-seed.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
1855	15445	10563	1984	661	325	315	5250
1854	8463	4063	525	1050	115	1050	3780
1853	56599	5197	1249	210	1228	..	12211
1852	153321	6673	619	525	1575	11067	
1851	150675	4651	304	136	2688	10951	
1850	187456	31248	3139	294	2247	5764	

The prices at the end of 1855 were per quarter:—

Wheat, old....	from	91s. to 100s.	.... New, 43s. to 74s.
1854 ..	,,	46 to 72	
Rye	,,	59 to 67	
1854 ..	,,	31 to 36	
Barley, little ..	,,	42 to 44	.... Great, 43 to 46
1854 ..	,,	25 to 30	.... ,, 28 to 32
Oats...	,,	27 to 32	
1854 ..	,,	18 to 19	
Peas	,,	57 to 61	
1854 ..	,,	35 to 37	
Linseed	,,	60 to 71	
1854 ..		No stock.	
Rapeseed.. ..	,,	76 to 80	
1854 ..	,,	67 to 71	

CLAYING PEAT OR FEN LAND, AFTER THE WHEAT IS SOWN, VERY BENEFICIAL.

SIR,—For the benefit of the owners and renters of peat fen land, I beg to inform them that a first-class farmer at Dyke, near Bourn, Lincolnshire, occupies two farms, one of high and, his own property, and another, a peat or fen farm, which he rents; both farms are in very high condition. Last year after his wheat was sown he forthwith clayed the fen land, the clay lying under the peat from two to five feet. Grips were dug about 8 yards asunder and about 2½ feet wide, out of which grips a sufficient quantity was dug out and thrown upon the peat, and the grips were nearly filled up with peat as the clay was taken out—claying this land cost 36s. per acre. It was thought by many farmers that the clay would smother the wheat, but it acted the reverse; the clay being chopped properly the wheat came through and round the clay very strong, and the clay kept the light peat from drifting by the winds in the frost, and in the dry weather in the spring, leaving the roots of some of the unclayed wheat naked for the want of clay to make the land firm, which caused so many light or half crops of fen wheat this year. And where the land was clayed after the wheat was sown produced half as much more per acre, and in some cases as much more per acre, and the wheat much heavier per bushel. The wheat produced and the stubble left upon the clayed land will prove what I assert. The two largest stackyards and the most corn I ever saw grown on the same number of acres, is by the said farmer this year at Dyke, and his farm and stackyards will bear inspection and strong investigation.

Dyke and Bourn fens are drained by a steam engine. The old proverb says "Men live to learn and learn to live," and there is yet vast improvements to be made in the land through agricultural chemistry, which is only in its infancy. I need not add that this Dyke farmer lays out a great deal yearly in artificial manures, oilcake, &c.; and we have in this neighbourhood many farmers of the first magnitude, useful and ornamental cultivators of the soil, and this first-class farmer says, "if good farming will not pay, bad cannot; a niggard in labour is never a good farmer." The above will show what may be done by high, good, and clean farming.

SAMUEL ARNSBY.

Dyke, near Bourn, Lincolnshire, Sept. 24, 1856.

HOW IS THE KNOWLEDGE OF SCIENCE TO BE EXTENDED?

To the British Association for the Advancement of Science, and to the report which they called for from Liebig, we owe, as we have often said, the present advanced state of agricultural chemistry. To the suggestions contained in that report we owe the present magnitude of the guano trade, and the present extensive manufacture of artificial manures.

If we are ever to have a system of agricultural education, it is not improbable that we shall owe that also to the British Association. There is a standing committee of that body, called the "Parliamentary Committee," who have recently reported on the question whether any means can be adopted by the Government or Parliament, that will improve the position of science or its cultivators in this country. That report is founded on the answers which they received to circulars propounding the above questions, in quarters deemed most capable of advising upon it. The whole of the subject discussed in these replies is divided by the committee under the following heads—

1. How can the knowledge of scientific matters be most conveniently and effectively promoted?

2. What inducement should be held out to students to acquire that knowledge, and, after the period of pupilage has expired, to extend it and turn it to useful account?

3. What arrangements can be made to give to the whole body of competent men of science due influence over the determination of practical questions, dependent for their correct solution on an accurate knowledge of scientific principles.

It is to the first of these questions—how is the knowledge of science to be extended?—that we shall confine ourselves on the present occasion. The committee observe, that for the purpose of this inquiry the community may be divided into those who resort to the universities for instruction, and those who do not. With respect to the former class, they consider no step would be more effective, than to require a certain amount of physical knowledge from every candidate for a degree. They hold it as an indisputable proposition—and we think few will dissent from them—that they who administer the affairs of the country ought, at least, to know enough of science to appreciate its value, and to be acquainted with its wants and its bearings on the interests of society.

It is melancholy, they say, to see the number of Oxford students who do not know the elementary principles of a telescope, a barometer, or a steam-engine. The contempt, they add, of anything manual or mechanical, which Bacon so strongly reprehended among the upper classes, remains to this day. They then refer to the evidence before the University Commission, shewing the inconvenience suffered by Oxford graduates, when thrown suddenly on their own resources, in a newly-settled country, from their neglect of physical science during their university career. The necessity of scientific knowledge is then adverted to, in the legislator, the statesman, and the legal profession, no less than in the naval and military services.

The committee declare that if a knowledge of physical science be made an essential condition to obtain a degree, there can be no doubt that it will be taught more extensively in schools and in the universities. This will give rise to an increased demand for teachers, or a modification of the professorial system. The increase in the number of teachers, and the necessity for giving increased salaries to secure highly qualified teachers, will create a variety of lucrative employments. This again will stimulate students to learn that which is capable of giving a comfortable provision in after-life, and thus a valuable species of knowledge will spread amongst those destined hereafter to teach or to discharge important functions or to fill high offices in the State.

Passing from the consideration of that portion of the community who resort to the universities for education, the committee observe that this class will be greatly diminished by university reform; but in order to extend the benefits of scientific inspection, they adopt the suggestions made in several of the replies to the queries which they circulated. These replies recommended that professors, paid either wholly or in part by the State, should be appointed to deliver lectures, either gratuitously or at a very cheap rate, in London and the principal provincial towns whose rules of admission and mode of management should be duly approved of. As the only means of rendering these lectures useful, it is proposed that they should be followed by examinations, and rewards to diligent hearers, who might be induced to extend their studies and assist in the diffusion of sound knowledge.

The inutility of such lectures, however, even accompanied by examinations, to test the ability and attention of the hearers, is admitted; and they are declared to be by no means a substitute for that course of severe study and elementary training which are alone capable of communicating exact knowledge of physical science.

The other scientific men whose opinions are quoted by the committee are Sir Charles Lyell, Mr. William Tite, and Sir Charles Lemon. These were all in favour of the foundation of lecturers, in part paid by the State and in part by fees, in some of our principal provincial towns, which have shown most zeal in the formation of establishments for the cultivation of science. Sir Charles Lemon, whose experience in these matters is well known, was decidedly averse to the employment of itinerant lecturers. Mr. Tite estimated the expense of founding thirty schools or colleges of this description, with six professors, on the average, in each, at £27,000 at the most—a very small sum, as he justly remarks, to be devoted in a country like Great Britain, to the practical scientific education of the people. If such establishments were formed in some of our principal provincial towns, the agricultural interest must benefit from them. As we have frequently observed, farmers do not require in their boyhood a different education in the rudiments of science from other classes; and the knowledge of this kind, which is to be imparted to them, they may receive in common with the youth intended for any other employment, in which a knowledge of physical science is useful—and in what employment is it not? The practical knowledge of farming is only to be learned on the farm. Some of it may be acquired before the youth goes to school. The rest will be best learned by a few years' instruction in the practice of farming either at home or with a farmer in some other of our best-cultivated districts.

We have given above an outline of that portion of the report of the Parliamentary Committee of the British Association for the Advancement of Science, which relates to the first of the three heads of inquiry to which their attention was directed. That question was, how can the knowledge of scientific truths be most conveniently extended? The reply was, by increasing at the expense of the State – and that at a very moderate expense compared with the objects in view—the means of obtaining scientific knowledge in establishments to be supported in part by the State, and in part by the contributions of the students.

The second head of inquiry, what inducements should be held out to students to acquire that knowledge; and, after the period of pupilage should have expired, to extend and turn it to useful account? One of the stimulants to the acquirement of this knowledge is considered by the committee to be the hope of qualification for remunerative employment as teachers of science, which the multiplication of scientific educational establishments will render necessary. This, therefore, is an agricultural question. Under the present tendency to the consolidation of farms, it becomes every day more difficult to find farms for all the sons of farmers. The multiplication, therefore, of scientific schools will benefit the agricultural interest in more ways than one. It will not only furnish those sons of farmers who are to be farmers with knowledge, which the advanced and advancing state of agriculture renders daily more necessary, but it will provide those who are not to be farmers with other remunerative sources of employment.

Under this head of inquiry the neglect of physical science in the University of Oxford is again adverted to. Lord Rosse is cited as bearing testimony, in his address to the Royal Society, that a man having taken a first class there may be ignorant of physics in their most elementary form; may be incapable of comprehending the first principles of machinery, or of forming a just and enlightened view of the resources of this great country. The extension of these studies, it is added, has lately been advocated by the Chancellor of that University himself, on the occasion of founding the new museum there. The report of the Oxford University Commission is also cited for the purpose of showing how little the rewards now held out for students in mathematics at that University can be denominated tempting. It advocates the provision of more numerous prizes in our universities; and other rewards and inducements, both for the prosecution and study of scientific objects, should be held out by the State, and the augmentation of professorships now very inadequately remunerated. Sir John Herschel is cited as recommending this; and also their foundation in other educational establishments, as one of the most directly beneficial means for the advancement of science itself, as well as for the general diffusion of its principles. He insists more particularly on the necessity of making better provision, by way of salaries, for those professors of the abstract branches of science which cannot be rendered popular, and therefore are not likely to be remunerative in the way of lectures.

The subject of pensions granted by the State to men of science is next adverted to. The committee observe, that in a former report they have adverted to the unsatisfactory manner in which the bounty of Parliament in this form has hitherto been distributed. The late Professor Edward Forbes is cited as suggesting whether it would not be desirable to found a number of scientific pensions, not for *relief*, but for reward of good service, like the *good service* pensions in the army. They would often, he says, be able to free the man of science from the drudgery of *pot-work*, and give him leisure for original research. This, he adds, would be a better reward than ribands and stars, or other labels upon the coats of philosophers.

On the subject of decorations and honorary distinctions, by way of encouraging the prosecution of scientific research, the committee observe that it has been very much doubted whether it will have any good effect. So long, they say, as the student is *in statu pupillari*, this system of rewards by medals presents no difficulty; but the case is different with respect to proficients. The chief objection to which they advert, is the difficulty of bestowing such distinctions in a way which will be satisfactory. The Government cannot be supposed to be sufficiently informed to act on its own authority; and if scientific assistance be resorted to, it will perhaps not be deemed advisable for the system of the cultivators of science rewarding one another to receive any extension. It is added, that in its present form the mode of conferring distinctions has not been satisfactory. Only those versed in the particular branch of knowledge to be rewarded can properly decide the merits of the candidates; and the fear that partiality will influence the decision of those who are either rivals, or may be considered such, is likely to render the task of deciding irksome, and to impair the efficient exercise of the judicial functions. The value, they add, of a scientific discovery can seldom be appreciated by cotemporaries. Professor Phillips gave it as his opinion, that medals should never be bestowed but for work done and published—that they should never be given for mere mental proficiency. They should be rewards for public services rather than for personal merit. The committee believe, however, that whatever objections may apply to the system, some medals are necessary as incentives to exertion, though there will be persons whose labours will be little affected by these stimulants, but who will be contented with the renown which such exertions bring in their train. On this subject Professor Faraday is cited as observing of the distinctions, both foreign and domestic, which he has received of this kind, "I cannot say I have not valued such distinctions. On the contrary, I esteem them very highly; but I do not think I have ever worked for or sought after them." Professor Mole, of Berlin, in his pamphlet on the state of science in England, has some remarks it is observed on the distribution of medals, and such-like honorary distinctions, to men of science abroad, not much calculated to enhance the estimation in which they are likely to be held in this country.

THE VALUE OF DRAINAGE WATER.

If a traveller on his return from a foreign land reported to us that its inhabitants allowed the manure from about 3,000,000 of sheep to run to waste—that they conducted it carefully into an adjoining river—it would naturally enough excite our astonishment. We should pity their ignorance, be perhaps sorrowful when we thought of the food thus wasted, and of the number of persons who might be fed by the corn raised in the use, as a manure, of such a flood of enriching fluids But if we were told that the land he had visited was called London, our astonishment would receive no inconsiderable increase, when we thought of the difficulties incessantly thrown in the way of employing the sewage of the 3,000,000 sheep-like conducted inhabitants of the metropolis. We should forthwith conjure up the vision of the forty-five talking daws who semi-weekly congregate to make speeches, when they should be acting—who waste the precious moments for action by entertaining projects for the embankment of the Thames, and by at last adopting plans which are pretty sure to be rejected by a still greater daw than any of those who congregate under the tawdry statues of Beckford and Chatham. In the name of common sense, of the public health, and of the economy of manuring, how long are these things to be endured? Will no member of Parliament be found during the next session able and willing to bring this question properly before the House?

But while we are deploring the loss of the valuable fertilising matters at present drawn from our farms to eventually *enrich* the Thames—a loss which every one acknowledges, yet not a single constituted authority makes the slightest practical effort to arrest—whilst we are sorrowing over these national losses, let us take the opportunity of asking ourselves if there are not, in the drainage-waters of our own lands, flowing from the drains of our own farms, streams which, like the far more powerful sewage matters of our towns, might be profitably collected, and distributed over the surface of our grass lands?

Some of these waters have recently been analyzed by Mr. Way, and when he has concluded his researches, we anticipate from him much more practical and useful results. His report, which will be found in the last number of the Journal of the Royal Agricultural Society, gives several facts worthy of the careful consideration of our readers, who may be usefully reminded that one grain of any particular substance in a gallon of land drainage water is equal, on the whole annual drainage of an acre of land, to 240,000 grains, or 34¼lbs. He analyzed seven previously filtered specimens of water from the field drains on Mr. Paine's farm at Farnham, in Surrey: in the two first of these he found, per imperial gallon—

Soluble organic matter	7.00	7.40
Nitric acid	7.17	14.74
Ammonia	0.018	0.018

Of mineral substances, he found in these waters—

Soda	1.00	2.17
Lime	4.85	7.19
Magnesia	0.68	2.32
Oxide of iron and alumina	0.40	0.05
Silica	0.95	0.45
Chlorine	0.70	1.10
Sulphuric acid	1.65	5.15
Phosphoric acid	a trace	0.12

We see from this analysis that the foreign substances present in land water are such as must tend to impoverish the soil by their withdrawal. And, again, we can hardly believe otherwise than that as these waters have been for some years carefully and profitably used in irrigation at some places, so the example thus set might be well followed in many other places which possess similar natural advantages.

THRASHING MACHINES NOT LIABLE TO TOLL.—Thomas Cartwright, the lessee of the tolls of the Bridgnorth and Cleobury Mortimer trust, recently appeared before the magistrates to answer to an information preferred against Charlotte Walford, keeper of the Billingsley toll-gate, for having demanded and taken toll for a steam-thrashing machine going through the gate, under the instructions received from Mr. Cartwright. This case excited much interest, and Mr. Lawley of Kinlet, appeared to press the information, with the object of having the case decided, there being a similar information against the keeper of the Baveney Wood gate, on the same trust. On the magistrates explaining the act to Mr. Cartwright, showing the clauses bearing upon the point disputed, as well as showing the decision of the judges in a case in which they had decided against the view he had taken, Mr. Cartwright bowed to their decision, and at once agreed to compromise the matter by returning the toll to Mr. Lawley and paying the costs incurred. This will affect both cases where the toll was demanded and taken, at Billingsley and Baveney Wood. The decision is an important one as affecting the interest of farmers, as well as turnpike-gate keepers, some of whom have hitherto conceived erroneously that a steamer is liable to toll when travelling unconnected with the thrashing machine.—*Worcester Herald.*

ON THE FATTENING OF PIGS,

A DISCUSSION AT THE WINFRITH FARMERS' CLUB.

Mr. Sly said: Gentlemen,—The pig is the most useful stock on a farm, as they eat all the refuse of the farm and dairy, which otherwise would be wasted and made of no account. With respect to the breed, I find a mixture of the Dorset with the white Berkshire to be the most profitable—that is, according to my own experience—both for growth and fattening. As regards the feeding of the young pigs when they are first taken from the sow, I give them whey, buttermilk, and a little pollard from the mill, and which generally proves to be their best food. When they are two or three months old, I begin to give them half-a-pint of peas or beans—such as I happen to have at the time—per day; that is, throughout the summer. As they grow larger, and food from the dairy begins to get short, as we have others to take their place, they are turned out to feed more on grass in the cow-leaze, and by giving them half-a-pint of beans per day, they grow and thrive well upon grass, with a little of the washings from the dairy, when we get a little surplus from the younger pigs. Of stock pigs, I have generally about forty or fifty to sixty, and they continue in the cow-leaze until the time arrives for taking up the roots, such as mangold wurtzel, swedes, &c. Then they are put up in the house to fatten; but before I tell you how I now treat the fatting pigs, I will tell you how I used to manage years ago, when I knew very little about the profit of fattening pigs, and which brought me to the system I now pursue. One pig that I had when I first commenced the farm on to the mill, I made 32 score, because I thought I would have a fine pig on the farm as well as the mill; but knowing that I did not get much profit from pig-fattening previously, or at least I thought so, I kept strict account against this one pig. Well, as I said, I fatted this pig to 32 score, and when I came to sum up the cost against the price of the pig, I found that I had lost just five pounds, one shilling, and one penny. That, of course, began to open my eyes, and I sought to turn them to better account; but before I proceed to tell you how I succeeded, I will tell you of two other pigs which I made to an extraordinary size—in fact, to such a size as you would scarcely deem credible, but I can guarantee the certainty of what I say, otherwise I would not bring it forward. I made two pigs 22 score and two or three pounds over, only eleven months and a fortnight old! That was something extraordinary, considering their age. Against these two pigs I kept no account, so that I do not know whether I lost or won by them. And I will tell you how they were brought to that weight. When I first took the farm, at the sale of the outgoing tenant, I bought a fine sow, nearly fat, and in farrow, and so large that I thought I was going to have a numerous litter of young pigs—at least fourteen or fifteen. I found, however, when she farrowed, that she had but two, and these I allowed to suck nearly three months. Owing to the sow being so fat, and again in farrow, I allowed them to go on, and being fine young pigs, I determined to see to what size I could bring them. I allowed them to go into a house where they could have plenty of whey, pollard, sharps, and such things, and when I weaned them they were nearly six score each, or more. Thus, in the space of eleven months and a half, I brought them to 22 score and a few pounds; but I cannot say what they cost me, as I kept no account against them. I will now proceed to tell you how I proceed when I put my stock of pigs up in the fall of the year. I put 20 or 30 together in a house, as far as the space will allow. Sometimes I have begun by giving them swede turnips, but the last two years I have left off doing so, and have begun with mangold wurtzel, as much as they will eat, which is generally half-a-bushel, cleaned, washed, and cut up, for each pig per day, with half-a-bushel of barley meal each per week. This is put over the mangold by hand in a floury state, and it thus sticks to the freshly-cut roots, and the pigs eat it well. This I find to be more profitable than fattening on swedes. I also find that slow fattening tends more to profit, than to force more than the frame of the animal will allow. By this management, my pigs the year before last paid me, by strict account keeping against them, 10s. per ton, after paying for the barley meal they eat with the roots; but last year they only paid 8s. per ton, but this I attribute to the barley being of a higher price. That is how I generally manage with my pigs; but the profit attached, after paying for the food, is in the manure that we take from them, and spread over the land. Nearly all of you, of course, know that I have gained prizes two or three times for mangold, and that is owing to my pig fattening; for even now, this year, where I have spread my pig manure, taken out of the house and carried up, beats all the other manure I had out in the mixen before; taken direct from the house and used, has paid better than even the same manure mixed up and allowed to heat in mixens. I allowed the straw used by the pigs to remain under them until it was some three feet in depth, for pigs like to lie warm. I found, however, that the droppings were mostly at one end of the house, and I was obliged to get the dry straw mixed up with the more rotten. That is the greatest profit I find attached to pig breeding. I could now point out to you a piece of land where I grew mangold two years ago, wheat last year, and clover this, and you can now see where the mangold was two years ago—that is, where my pig manure was spread—by means of the thickness of the clover, although the land by its side was well manured; so you see that the profit is mostly gained from the manure we get from the pigs. If the landlords looked to their own interests as well as to the interests of the tenantry, they would provide good pigsties wherever they might be wanted, and then they would find that the tenants, seeing these good pigsties put up, could not help laying out some money to put some pigs in them, for I am certain if they only saw as I see at present, they would not allow their pigs to be without sties, but would put them up in every direction. For instance, some of the gentlemen present who have hilly farms, if they could get pigsties on the top of some of their hills, so as they were kept warm, they would not have to pay so much for hauling manures. I made an experiment last spring upon four pigs, feeding two with mangold, and two with swedes. They were from the same litter, and I weighed them so as to have them the same weight as near as possible. I put them in a house, and allowed them to have a bushel of barley per week, with the mangold and the swedes, and both were weighed as carefully as if I were going to sell to any person. When I killed these pigs, as I fully expected, those that had been fed with mangold were the best, and I found that they paid doubly better than those fed with swedes. But I have been told by some of my friends that it was not giving the swedes a fair chance, because mangold contain a much larger quantity of saccharine matter in the spring than the swedes, and then I told them that I would make another trial in the fall. It is too early to begin yet, but in the course of another month I shall try again on the same principles. That will be a fair trial as to which is the best root for them. I gave the pigs as much mangold and swedes as they chose to eat, which was about 20lbs. per day when cut up. One thing I always observed, namely, that those pigs fed upon mangold always cleaned up their troughs quicker than the others eating swedes. Both roots were washed before they were cut up; we were very particular about it, and they were well attended to, for I saw them myself every day. However, I shall at some other time be able to tell you whether they pay so well in the fall as they do in the spring. With regard to the superiority of mangold over swedes, I have always found that my fattening beasts, when we have left off giving them swedes, thrived much better on mangold, and their coats become warmer, and assume a more glossy appearance within a week from their being served with the latter root. Therefore, I consider that the mangold has more fattening properties than the swedes—at least, those that grow on my land. Perhaps, gentlemen, your land may be different, and grow swedes with as much or more nutrition than mangold; but I know that some of my land will grow mangold that will not grow swedes. In some places I have grown mangold weighing 20lbs., where, if I planted swedes, they would not come to half-a-pound, but become club-rooted and die away; so that different lands have different properties for bringing the root to perfection. Gentlemen, I do not know that I can tell you anything more upon this subject. I shall be happy to hear the suggestions and comments you may make, and will conclude by saying—

> The pig, most useful of the fattening race,
> Eats food that most other stock detests:
> When tended well by female's skilful hand,
> Makes most variety of wholesome food for man.
> They make the best manure to enrich the land,
> When judiciously applied by the industrious husbandman.

(Cheers and laughter.)

Mr. Clarke said: What I now intend to state is the result of my own observation. With respect to the breed of pigs, we know there are many, and most people consider Fisher Hobbs's to be the best of any; but the fact is, there are so many kinds that go by the name of Fisher Hobbs's pigs, that they do not come within fifty degrees of his animals, and are in no way related to them, though going under his name. I do not think for a moment it is advantageous to the farmer to have very high-bred pigs. I have found that I was always out of pocket by them; but by crossing these very high-bred animals with a breed which is commonly known as the Essex breed, I found I improved them very much, not only with respect to breeding, but also with respect to fattening; they are disposed to fatten more, and come to much greater size than the high-bred pigs. Again, I think it is very essential that great attention should be paid to young pigs, and simply for this reason—that it is an animal which, if well looked after, there can be no question about its paying. It must have proper attention; it must be kept clean, and it must be kept warm; and, in my opinion, should always have warm food to a certain degree. I do think it is essential that they should have their food luke-warm or milk-warm for a certain time. They should also be kept warm and comfortable, and their sties properly cleaned out every day, and always see that they have a good comfortable rest. With respect to fattening, I have seen and tried various modes. I have seen many pigs fattened to a large weight wholly and solely upon potatoes. I am far from saying that this meat, this pork, or this bacon, is so good as if the pigs had had better food; but, at the same time, I have seen them grow to a great size and weight when fed upon potatoes alone. They should be parboiled and given to them in that state. I have had the fancy to try, for about two years, the result of boiled barley as compared with ground barley—that is, I boiled a bushel of barley, and I sent a bushel of barley, or it may be a sack, to the mill, and I put four pigs up, two in a sty. When I did so, I could hardly tell which to select as the best pair, for they were so much alike in every point; but I continued the test of boiled barley against ground barley—recollect, they had some swede turnips in addition—and at the end of about six weeks or two months, my impression was that the two fed with the boiled barley were better than those fed with the ground barley. That was my impression, though I did not weigh the pigs when I put them up—I went by the eye. It may be a good plan, as some are in the habit of doing, giving their pigs dry barley meal, throwing it over the roots; but I do not hold with it, and I will tell you why. I think in the first stages of fattening it ought to be mixed, and in the last stage, if we mix it up into balls or cakes, somewhat as we do with our fatting animals, I think it is better, and there is not a particle of waste. That I have myself proved. Again, gentlemen, with respect to getting rid of those pigs, I am sorry my friend Mr. Saunders is not here, for I am at a loss what to tell you upon that subject; but this I will say, that if pigs are well attended to, and well managed, they will pay, and the breeder will get remunerated for his outlay, whatever it is. With respect to the manure, we know no manure that will hardly excel it. I have applied it to mangold wurtzel and swedes, and as I have, perhaps, a greater variety of soils than my friend Mr. Sly, and some of them very bad, I had, therefore, a better opportunity of testing it than he has, and I have always found that where I have applied it nothing could beat it. There is one observation which I ought to have made before, and that is—when I put my pigs up to fatten I never force them, but let them go on gradually, until we get them to what I call the filling up in the inside, something appertaining to fat clinging to the ribs. Thus I proceed, and I have always found it better to begin with little, and go on increasing until the end.

Mr. Randall inquired whether Mr. Clarke continued serving them with boiled barley and ground barley until the time came for killing?

Mr. Clarke replied in the affirmative.

Mr. Randall: And then you found a difference in the weight?

Mr. Clarke: I did not weigh them. I continued the plan I alluded to for about six weeks or two months, and I served them with the same quantities. If I sent a sack of barley to the mill, I also boiled a sack of barley.

Mr. Randall than alluded to a plan followed by Mr. Barnes, of Lulworth, who fatted some pigs, of fifteen score each, by only giving them half-a-bushel of Indian corn each per week.

Mr. Clarke said, he thought it best to steam the roots, and work them up into a pulp in a strainer with a tub beneath, into which the liquor would flow, giving the pulp to the store pigs, and mixing the liquor with the barley meal for the fattening pigs. He believed that would be better than giving the roots in a raw state.

Mr. R. White said, for six or seven years he had tried different ways, and the cheapest he always found was to begin with half-a-bushel of barley meal per week, and so keep on for a time, and at the end increase the quantity to a bushel per week. He had generally made them pay for what they ate, and a little more, besides the manure; there was not very much profit to be obtained out of them were it not for the manure. He did not concur in the practice of washing the mangold and swedes, he merely cleaned them.

Mr. Reader remarked that he could not get some of his pigs to eat raw mangold and swedes, so some time ago he purchased one of Phillips' root pulpers, and with the pulp thus obtained he mixed a small quantity of barley meal. He did not think he allowed his pigs more than three-quarters of a peck per week for the first few weeks, and by pulping the roots they could put ever so small a quantity of meal, and it could be mixed up regularly and evenly, so that the pigs could not eat the one and leave the other, and thus there was no waste or loss. As the pigs increased in fatness, so he increased the meal, and at last he gave each of them half-a-pint of peas a-day besides. They throve very well upon this until they became very fat, when he found that a great many refused the peas, and then he was obliged to increase the meal to nearly a bushel per week, and those were the best pigs he had ever had. He quite agreed with Mr. Clarke, that if they have young pigs they must be kept going, for if they were regularly checked he thought they would be injured, and would never pay any person, let them buy them ever so cheap.

Mr. **White** inquired whether much advantage was to be gained from pulping. He had found the pigs eat the roots very well if only cut with a root-cutter.

Mr. **Reader** said he thought there was great advantage.

Mr. **Sly** remarked that he had such an opinion of the practice, that he intended to purchase a root-pulper.

Mr. **Randall** thought there was no advantage in the root being boiled so soft.

Mr. **Clarke** agreed that they should not be boiled too much, as it took so much fuel and labour for a number of pigs.

Mr. **Mead** said he had fattened a pig to 35 score in six months by feeding it with flaxseed, bean meal, and barley meal, about half-a-bushel of flaxseed to a sack of beans and barley. The flaxseed he boiled. He took away the young ones in July, and killed it about the middle of January.

Mr. **Randall** remarked that the preceding speakers had omitted to mention as to the time for taking away the young pigs from the sow, and the treatment of the sow during the time of farrowing. Perhaps Mr. Sly would be kind enough to give them his experience in this matter.

Mr. **Sly** said: At the time of sucking, the sow should have no barley whatever given. We have known by experience that giving them barley dries up the milk, and stops the growth of the young pigs; and if you continue to give them barley, perhaps the whole of the farrow will die before they are six weeks old. The best plan, I find, is to give the sow some pollard and coarse bran mixed with whey. Anything grown from wheat will improve the young pigs, but anything from the barley will injure them, so that by giving the above mixture with the roots, it will rather increase the growth of the young pig than otherwise. At the same time we always preserve the buttermilk and whey, mixed up with sharps and such other things as we have to spare. When we take the litter from the dam, it is requisite that they should be kept clean, and placed in a warm house, for a pig kept warm will always grow and thrive best. I have tried some experiments in fattening pigs, both in summer and winter, and I have always found that those reared in the summer always fattened faster than those raised in the winter. This I attribute to their being kept warmer in summer than in winter. Then, with respect to the time they should be put up to fatten: in order to make them pay, they should never be put up before they are six months old, although during the time from being taken from the dam till they have attained that age, they should be kept in a growing and flourishing state. When the pig is weaned, give them a little raw barley, it does not injure them; but even at that time peas and beans are more beneficial. With respect to fattening pigs, I can now tell you of an experiment which I made at one time upon eight pigs six months old, and four pigs perhaps twelve or eighteen months old. These pigs I bought in Dorchester market, and I put them up, and kept them upon the same sort of food. They cost, each of them—the eight pigs and the four pigs—the same amount within a few shillings. When I killed them and weighed them, and sent them to market, the large pigs did not fetch so much by one shilling a score as the small ones did. I forget exactly the price now, but the large pigs paid me £1 a-piece for food and 8d. over, and the eight small pigs I lost £4 by; so, by putting both together, I was only just 8d. in pocket, and that was all the profit I had, excepting the manure, which, I considered, went for labour. Therefore, it is my opinion that the larger pigs always pay more for fattening than small ones, even if we get a shilling a score less price.

Mr. **Sly** then proposed the following resolution, which was carried unanimously:—"That pigs of a medium size, such as the Berkshire, or a cross between the Essex and Dorset, have been found to answer the best purpose; the small fine breed not increasing in quality or weight sufficient to pay, and the large coarse breed not giving a return in proportion to the food consumed, and not being so marketable when fat. The pigs, when taken from the dam, should be kept well bedded and warm during the winter, and always fed so as to be kept well growing, and not put up to fatten before six months old, when they shall be kept principally on roots, either pulped or cut with Gardner's cutter, and mixed with meal, consisting of half-a-bushel of flaxseed, tares, or Indian corn, to three-and-a-half bushels of barley, at the rate of a peck each per week, increasing the meal to a bushel per week before being killed."

THE SNOW.—The snow was proverbially called the "poor farmer's manure" before scientific analysis had shown that it contained a larger per centage of ammonia than rain. The snow serves as a protecting mantle to the tender herbage and the roots of all plants against the fierce blasts and cold of winter. An examination of snow in Siberia showed that when the temperature of the air was seventy-two degrees below zero the temperature of the snow a little below the surface was twenty-nine degrees above zero, over one hundred degrees difference. The snow keeps the earth just below its surface in a condition to take on chemical changes which would not happen if the earth were bare and frozen to a great depth. The snow prevents exhalations from the earth, and is a powerful absorbent, retaining and re turning to the earth gases arising from vegetable and animal decomposition. The snow, though it falls heavily at the door of the poor, and brings death and starvation to the fowls of the air and beasts of the field, is yet of incalculable benefit in a climate like ours, and especially at this time, when the deep springs of the earth were failing, and the mill streams were refusing their motive powers to the craving appetites of man. If, during the last month, the clouds had dropped rain instead of snow, we might have pumped and bored the earth in vain for water; but, with a foot of snow upon the earth and many feet upon the mountains, the hum of the mill-stones and the harsh notes of the saw will soon and long testify to its beneficence. Bridges, earth-works, and the fruits of engineering skill and toil may be swept away, but man will still rejoice in the general good, and adore the benevolence of Him who orders all things aright. The snow is a great purifier of the atmosphere. The absorbent power of capillary action of snow is like that of a sponge or charcoal. Immediately after snow has fallen, melt it in a clean vessel and taste it, and you will find immediately evidences of its impurity. Try some a day or two old, and it becomes nauseous, especially in cities. Snow water makes the mouth harsh and dry. It has the same effect upon the skin, and upon the hands and feet produces the painful malady of chilblains. The following easy experiment illustrates beautifully the absorbent property of snow: Take a lump of snow (a piece of snow crust answers well) of three or four inches in length, and hold it in the flame of a lamp; not a drop of water will fall from the snow, but the water as fast as formed, will penetrate or be drawn up into the mass of snow by capillary attraction. It is by virtue of this attraction that the snow purifies the atmosphere by absorbing and retaining its noxious and noisome gases and odours.—*New England Farmer.*

ON THE BEST MODE OF STORING ROOTS.

In a recent trip through Hampshire and the eastern portion of Sussex, we remarked the steady increase in the growth of mangold, and the care with which, during the past month, it was storing in straw and earth-covered clamps. A few days more, and swedes will have also to be thus protected from the influence of frost. We well know that most of our readers are not unaware of the importance of the root-storing system; but few of them have perhaps deemed it necessary to institute comparative trials as to the nutritive qualities of the stored and unstored. Such trials, however, have been recently completed by a Scotch farmer—Mr. J. Porter, of Monymusk; and his account (which will be found in the present volume of the Prize Essays and Transactions of the Highland Society) is full of sound practical information. Two lots of cattle, rising two years old, four in each lot, were tied up on the 28th of January, 1855, in the same byre; were fed daily with the same weight of turnips, and oat-straw *ad libitum.* Of these two lots the first were fed with the golden-yellow turnips produced in the same field; one, however, with stored turnips; the other with the turnips drawn as they were required from the field. They were weighed when they were put up, and again on the 22nd of April, when the following results were obtained.

The four fed on stored turnips:

	Weight January 28.			Increased weight April 22.		
	Cwt.	qrs.	lbs.	Cwt.	qrs.	lbs.
1	8	0	0	0	3	14
2	8	2	0	0	2	14
3	8	0	14	0	3	7
4	9	2	0	0	2	14
Total increase				2	3	21

The weight of the four fed with pulled turnips:

	Cwt.	qrs.	lbs.	Cwt.	qrs.	lbs.
1	9	0	0	0	2	14
2	7	2	14	0	1	7
3	9	2	7	0	2	7
4	8	0	0	0	1	14
Total increase				1	3	14

Here we have nearly double the increase of weight in the cattle fed on stored turnips over those fed with the roots left exposed to the weather and pulled as they were wanted.

The observations of Mr. Porter on the best mode of storing roots, are well worthy of our readers' attention. He is evidently more fearful of the effects of even a slight frost upon the swedes whilst they are storing, than of the ill results of some degree of moisture. He prefers, therefore, pulling and storing the same day; and advises these stores to be placed at the homestead, as near the byres as convenient, and sufficiently large to contain six or eight weeks' consumption.

The practice in the district of our reporter is to erect these stores of wood, of an oblong shape, six or seven feet wide, to give room for a cart, and about four feet high. The sides are made of two rows of posts, fitted into the ground, about six feet apart, and made close with backs of trees or any old wood. This wood-work is erected piecemeal as the storing proceeds. If wood is scarce, oblong ridged heaps are employed, about seven or eight feet wide at the bottom, and these heaps are thatched with about six inches' depth of straw. It is hardly necessary to enlarge upon the necessity, in turnip storing, of avoiding cutting the bulb of the turnip in removing the bottoms and tops, or of rejecting the finger-and-toed roots.

It would seem, however, from the result of the most recent observations made in Scotland and the north of England, that this formidable disease does not occur to any extent on land which has been recently limed. Upon the importance of these valuable northern observations we need hardly enlarge, since they tend in the most practical of all directions—to the preservation of our turnip crops from disease, and from injury during those winter months when we have little else to rely upon for the supply of our cattle-yards.

THE LORD MAYOR'S SHOW.

Fortunately enough, we have many habits and customs amongst us, which, though gradually, still as certainly, wear themselves out. Day after day we come the less and less to observe them, until at length we begin to wonder how we could ever have honoured them at all. The English gentleman is no longer called on to maintain his position by his prowess over the bottle. The best of the argument is now rarely arrived at by running your adversary through the body, or shooting him through the head. The critic as seldom seeketh to dwell over the five long acts of the one long play. The sportsman knows no more the elongation of the four four-mile heats. Even royalty itself has learnt to dispense with many a piece of useless formula, and cumbrous etiquette; while our senators at any rate try to talk less "fine" and more to the point. In a word, we are all wiser as we get older in what we have to uphold and enjoy. The glory of many a feast and high-day must suffer something accordingly. The wildest Irishman has no especial necessity to drink himself blind or mad in compliment to his patron saint. Society no longer demands this duty of him. The mysteries of Jack-in-the-green and his May-pole friends statistically decline; our ancient enemy Guy Fawkes is fast losing all identity in some passing squib; and Bartlemy Fair is banished for ever.

And what might we banish with it? What *are* we banishing with this great city celebration? If our rulers have tired of some merely senseless ceremony, surely we might be loyal enough to follow their example. If in private life, each one to the other, we feel we are yet charged with the maintenance of some bygone absurdity, might we not say as much in public? In this instance, however, there is hardly the call for any such demonstration. Is there a man in his senses but who knows the Lord Mayor's Show to be a piece of worn-out tom-foolery? A doomed day, already far in its decline and fall, and one as sure to pass into limbo as its great ally of Bartlemy, the noble pastime of bull-baiting, or the goodly profession of looking into futurity.

Have any of our readers ever seen a Lord Mayor's Show? If so, they need not to be told of the air of ridicule attached to the whole proceeding, of the spirit of the crowd, which continually gives vent to its one common opinion, in mock cheers and derisive compliment. If they *have* witnessed this imposing pageant, they have seen the unhappy officials especially paraded, as it were, to be laughed at—the City Sword-bearer, or whatever he is, stuck in sideways, with his fur cap and owl-eyed spectacles—a perpetual multiplication of Bumble the Beadle, looking as savage and as dignified as ever did that much-injured man—fiery, Zamiel, red-devil-coloured watermen, with curious calves to their legs, and wondrous banners on their shoulders—Knights and esquires from Astleys, the only decently dressed people of the whole company—A ricketty, ginger-bread thing called a state-coach, in which some half-dozen half-demented men have been persuaded to impale themselves—A better got-up state-carriage, in which another worthy, much to his credit, earnestly endeavours to hide himself. Season these at intervals with a few hackney-coaches, driven byout-of-place helpers in baggy berlins and greasy hats—with a sprinkling of Dragoons evidently not half as much at home as our friends from the Circus—with a band or two hard at work on the appropriate air of "See the conquering humbug comes!"—And, of course, with a full complement of much-enduring police—and so you have a Lord Mayor's Show. Being always pleased to bear in mind, however, that every man in the procession, from the Lord Mayor that is, or was to be, down to Bumble the beadle, looks, as he well may, heartily ashamed of himself; and, that the one great all-consuming desire on the part of the crowd appears to be centred in the—alas!—unattainable gratification of bonneting the hoary-headed hero in the fur hat.

And is not this enough? Cannot these municipal martyrs be satisfied with the sacrifice of their own self-respect, without forcing other people and other pursuits to take a part in their buffooneries? When, a few years since, "the man in armour" could stand it no longer, but threw up his appointment, a great effort was made to give a new character to the entertainment. There came, not only a whole army of Knights, but of Ladies fair, also from "t' other side of the water." The thing had taken an essentially dramatic turn, and Madame Stitcktighto as "Britannia", a famous she-questrian and fine figure, showed it off to the best advantage in a kind of horse-marine car, a ship upon four wheels, with hornpipe sailors, an infinity of Union Jacks, and all complete. Unfortunately, though, it was a real November day, raw, mizzling, and cold; and by the time Britannia got to the end of her voyage she looked as blue as one of her own waves. More than this, she would not repeat the performance, and so the Worshipful Corporation had to look out for something else.

And what do you think they have done? Echo it not at Holkham! Whisper it not over the breezy uplands of Goodwood! Knell it not forth, great Tom of Lincoln, and be silent, thou sweet genius, that so long has haunted the pleasant paths of Woburn. "Be silent that ye may hear:" They have crowned agriculture—with a cap and bells. They have dragged her bodily into the midst of this long, tedious, witless parade. They have associated the progress of Agriculture with the progress of the Lord Mayor's Show! They have done it with all their strength. Imagine it not merely emblematic—Britannia persuaded to re-appear in pink tights and a very rosy face, with an ear of *real* wheat in one hand, and a cornucopia in the other—With nothing so kind nor so lenient as this. But picture, rather, the knights in pasteboard armour, the red-nosed beadledom, the red-devil looking watermen, the fur-topped mace-bearer, and the gimcrack coach—picture all this congenial foolery parcelled out with the emblems and implements of so noble a calling as the pursuit of agriculture. Watch the cockney crowd as they see Boydell's monster of an engine—the invention that of all others is to supersede horse labour—drawn ingloriously along by four horses. Note its great flapping wheels and curious movement, and then consider how much it is in place here ! Or Fowler's steam plough, trailing through the streets at the heels of a pair of Suffolks. Or the prize reaping machine, grandly elevated on a triumphal car, decked out with sheaves of corn, which droop their heads in sorrow, and mangels, that knowing people affirm to be pines for the Lord Mayor to feed upon. And then come twelve esquires on horseback—supplied by Mr. Cooke; and then twelve knights, as per contract with Mr. Cooke on the same terms; and then, most welcome and most appropriate of all devices, *three trumpeters !* Blow, ye three trumpeters ! Blow bravely your three trumpets ! For with these, after all, are the honours of the day. Blow away for the sheriff's chariot ! Blast away for the produce of Tiptree ! Blow away for the endless railway and the endless humbug ! For mangels and beadles, farmer or alderman, and for reaping machines of all sorts ! Blow away !

Can anyone for a moment suppose that such nonsense as this is likely to do anybody any good ? On the contrary, if it have any effect at all, it must be prejudicial. There have been plenty of folks ready enough to laugh at agriculture without ever giving them such good cause to do so as they enjoyed last week. Agriculture and commerce may go hand-in-hand, but let us meet and join, if we must parade our friendship, on some more fitting occasion. As we take it, the mock-duke dignities of the Lord Mayor's show have in reality no more to do with success to commerce than, we are happy to say, they have with that of agriculture. The only way, in fact, in which we can account for the introduction of the latter, is that the whole thing is an absurd contradiction from beginning to end. Men go as spectacle-makers, or fishmongers, or merchant-tailors, or as of some other business they have nothing to do with. And so, we suppose, agriculture went because she had no business there at all.

Our thanks for this honour appear to be chiefly due to a gentleman who has now realized the high position of ranking as a farmer amongst aldermen, and as an alderman amongst farmers. Could we dispute such authority, when we see it armed like Janus of old, giving here a countenance to turtle, and there to turnips ?

Why are sheep the most dissipated and unfortunate of animals ?—Because they gambol in their youth, frequent the turf, are very generally blacklegs, and are universally fleeced.

SUPERPHOSPHATE OF LIME.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—We observed in your paper of the 4th of last August an advertisement of superphosphate of lime, which was described as having been analyzed and valued by Professor Way ; and in your paper of the 14th of last April there appeared a report of Mr. Nesbit's lecture and valuation of the same article, addressed to the London, or Central Farmers' Club, wherein a different value is given of the principal component parts.

We give Mr. Way's analysis and valuation, and opposite to it Mr. Nesbit's valuation.

No. I.

		Way's valuation.				Nesbit's valuation.		
		£	s.	d.		£	s.	d.
Moisturo	3.68..	0	0	0		0	0	0
Organic matter, &c.	9.54..	9	10	0	× £1 =	9	10	0
Sand, &c.	2.99..	0	0	0		0	0	0
Biphosphate of lime.....	21.63							
[= Soluble phosph. 31.89]	..	1052	14	0	× 24 =	765	7	2
Insoluble phosphate	20.37..	142	5	0	× 8 =	162	19	2
Sulphate of lime........	38.90..	38	18	0	× 1 =	33	18	0
Alkaline salts	2.89..	2	18	0	× 1 =	2	18	0
	100.00							
Ammonia	00.33..	18	0	0	× 60 =	20	0	0
		12,64	5	0		9,99	12	4
		20				20		
		12,80				10,92		
		12				12		
Way's value £12 12 9								
Nesbit's value 9 19 11		9,60				11,08		

No. II.

		Way's valuation.				Nesbit's valuation.		
		£	s.	d.		£	s.	d.
Moisture	13.79..	0	0	0		0	0	0
Organic matter, &c.	6.61..	6	12	0	× £1 =	6	12	0
Sand, &c.	5.2'..	0	0	0		0	0	0
Biphosphate of lime	11.07							
[= Soluble phosph. 17.82]	..	588	0	0	× 24 =	427	13	7
Insoluable phosphate....	12.79..	90	0	0	× 8 =	102	6	5
Sulphate of lime........	44.30..	44	6	0	× 1 =	44	6	0
Alkaline salts	6.23..	6	5	0	× 1 =	6	5	0
	100.00							
Ammonia	00.23..	14	0	0	× 60 =	13	17	2
		7,49	3	0		6,01	0	2
		20				20		
		9,80				20		
		12				12		
Way's value £7 9 9								
Nesbit's value .. 6 0 2		9,60				2,40		

These high authorities differ materially in their estimate of value, Mr. Way stating No. I to be worth per ton.. £12 12 9
Mr. Nesbit only.. .... 9 19 11

Difference £2 12 10

No. II.

Mr. Way estimates at per ton..................£7 9 9
Mr. Nesbit only 6 0 2

Difference £1 9 7

As so much difference of opinion exists amongst men eminent in their profession, and whom both manufacturers and consumers have always to consult, we think it should be decided which valuation is the correct one. We feel some diffidence in expressing our own opinion, but guiding ourselves by the average price of materials, we think Mr. Nesbit's valuation sufficiently high to leave a fair profit to the manufacturers.

We are, Sir, your most obedient servants,

Miller and Johnson,
37, Mincing-lane.

4*th Nov.*, 1856.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The COUNCIL resumed their Meetings, after the autumn-recess, on Wednesday, the 5th of November.

The following Members of Council and Governors of the Society were present:—Mr. Evelyn Denison, M.P., President, in the Chair; Sir W. W. Wynn, Bart., M.P., Mr. Acland, Mr. Alcock, M.P., Mr. Raymond Barker, Mr. Barnett, Mr. Brandreth, Mr. W. G. Cavendish, Col. Challoner, Mr. Druce, Mr. Gadesden, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Jonas, Mr. Kinder, Mr. E. Pope, Mr. Allen Ransome, Mr. Shuttleworth, Professor Simonds, Mr. H. J. Thompson, and Mr. H. Wilson.

FINANCES.—Mr. Raymond Barker, chairman of the Finance Committee, reported that the current cash-balance in the hands of the bankers was £1,027. He also submitted to the members the usual quarterly balance-sheets of income and expenditure, and of assets and liabilities.

HOUSE.—Mr. Raymond Barker, as chairman of the House Committee, also reported the progress of the repairs in the course of being made during the autumn in the house of the Society.

STATISTICAL TABLES.—Mr. Thompson, Chairman of the Journal Committee, reported the recommendation of that Committee that the Council should pass a vote of thanks to Henry S. Bright, Esq., of Hull, for the liberal manner in which he had placed his statistical tables at the disposal of the editors of the Journal—a recommendation which the Council at once cordially adopted, and passed an unanimous resolution to that effect.

PRIZE ESSAY.—Mr. Thompson also reported from the Journal Committee that the Judges of Essays had made the following adjudication :—

To THOMAS F. JAMIESON, of Ellon, Aberdeenshire, the Prize of FORTY SOVEREIGNS for his Essay on the Chemical Results superinduced in newly-deepened Soil by Atmospheric action.

TRIALS OF REAPERS AND STEAM PLOUGH.—On the motion of Mr. Brandreth Gibbs, seconded by Mr. Allen Ransome and Mr. Druce, the best thanks of the Council were voted to Mr. Fisher Hobbs for the facilities he had offered for the deferred trial of reaping machines and steam plough at Boxted Lodge, for the liberality with which he had supplied his horses and men for their working, and for the general courtesy he had displayed on that occasion.

COUNTRY MEETING IN SURREY. — Mr. Alcock, M.P., as chairman of a public meeting held at Reigate on the 4th inst., presented the following memorial on the part of a special committee :—

We, the Committee appointed by a public meeting held in the Town Hall, Reigate, beg to memorialise the Council of the Agricultural Society that Reigate should be the place of the Annual Country Meeting of the Society in the year 1860. Reigate is on the junction of railways which unite London, Brighton, Southampton, and Bristol, having two termini at London Bridge, one at Waterloo Bridge, and another at Paddington, and before long will be added a West End terminus. Reigate may be considered the threshold of Great Britain to all the continent. Reigate is the most central and approachable place for the Agricultural Society's Meeting for the district of "Kent and Surrey," and we are ready to forward in aid of the funds of the Society £1,500, whenever the Society may call upon us. We would point out that scarcely a spot in England can be found which shall combine so many advantages as to facility of approach and beauty of position, and the salubrity of the place is verified by the statistical returns of the Board of Health. The proposed landing-place at Reigate is close to the Reigate Town Station, adjoining which are 20 acres of meadows, bounded on the north by Reigate Hill, on the east by the Brighton turnpike road, on the west by land which would be available for ploughing experiments, and on the south is offered the unusual advantage to persons on quitting the railway carriages of finding themselves actually within the implement show yard. In fact, we believe that it would be more easy for 250,000 people to profit by the show at Reigate than for 100,000 to be collected at Salisbury or Maidstone, or any other place not in connection with as many railways as are united at Reigate.

COMMUNICATIONS were received from the Foreign Office announcing that the Cattle Distemper had ceased in Mecklenburg ; also, that the Government of Norway had forbidden the importation of Horned Cattle from England and Scotland into that kingdom. Mr. Bolton presented, through the President, a Paper on the Aëration of Land. Mr. Warriner, of 38, Finsbury-square, announced what he believed to be the valuable discovery of a new and cheap source of manure.

The Council adjourned to their next monthly meeting on the 3rd of December.

IMPORTANT TO FARMERS.

EXTRAORDINARY CASE.

A case occurred at Midridge, in this county, on Saturday last, which is not only one of vital importance to tenant farmers, but interesting to the public generally—as affecting the liberty of the subject—and to the manufacturers of steam machinery adapted to agricultural purposes,as affecting their trade.

In order that the subjoined account of the proceedings connected with this case may be fully understood, it is necessary to state that Mr. John Newby, of Bishop Middleham—the gentleman immediately concerned in this affair—is a farmer, and that he and his ancestors have occupied a farm at Midridge for about 80 years. In the year 1854, Sir William Eden, of Windlestone, purchased the farm, and in the following year completed the purchase; after which he gave notice to Mr. Newby to quit at May-day, 1856, which was accordingly complied with, and another tenant entered upon the premises—subject (according to the custom of the country) to Mr. Newby's right to his away-going crop, which, after having been reaped, was stacked upon the premises. The stack-garth was, however, too small to contain the whole of the crop, and a portion was therefore stacked near to it. It appears that it was a matter of convenience to Mr. Newby to thrash out a portion of his corn, and—there being only an old horse thrashing-machine on the premises—in order to save time and expense, he engaged for this purpose one of the portable steam thrashing-machines of the Durham County Agricultural Implement Company; and it was the use of this machine which led to the extraordinary proceedings which will be found subjoined.

It appears, from the statement which has been furnished to us, that on Friday last, Mr. Robinson, Sir William Eden's agent, went to the stack-yard with a policeman named Caygill, and the constable of the parish, and stated that he had come with Sir William's orders to compel them to desist from thrashing the corn with the steam thrashing machine. Mr. Newby having refused to comply with this demand, Mr. Robinson ordered the policeman Caygill to take Mr. Newby into custody, which was accordingly done. He was, however, only taken from the stack-yard into the street of the village, and then liberated. Mr. Robinson then directed the parish constable to shut off the steam; but that worthy, being rather imperfectly acquainted with the mysteries of the manufacture of Messrs. Clayton, Shuttleworth, and Co., instead of shutting it off, so greatly increased the speed of the engine that, had not the Implement Company's engineer rushed to the machine and turned off the steam, the consequences might have been the destruction of the engine and the sacrifice of the foolhardy constable. Owing to this interference on the part of Mr. Robinson, the work was stopped for that day, and the men were thrown idle.

On the Saturday morning—having, in the meantime, ascertained from his legal adviser, Mr. H. Marshall, that there was no law to prevent him using the steam thrashing-machine—he ordered it to be again set to work. About an hour after the engine had been at work, the police constable made his appearance, and ordered them to stop the engine immediately. This Mr. Newby refused to do, upon which the policeman went away; but, after the lapse of an hour, he again returned, with Sir William and several of his dependants. On entering the stack-yard Sir William ordered a man of the name of Walker, who was feeding the engine fire, to put it out. The man refused to comply with this request, upon which Sir William ordered him to be taken into custody; which was accordingly done; after which he was handcuffed. Upon this Mr. Newby went to supply Walker's place at the engine. Sir William then went up to Mr. Newby and demanded that the fire of the engine should be immediately put out. This Mr. Newby refused to do, stating that he had obtained legal advice upon the subject. Sir William then ordered the constable, Caygill, to give Walker into the custody of one of the attendants and to apprehend Mr. Newby, which he accordingly did, and immediately handcuffed him to his man Walker. Sir William Eden then attempted to put out the fire with his stick, but, being unable to accomplish his purpose, he ordered a quantity of water to be thrown upon it, which very fortunately had the desired effect. This, however, was rather a dangerous experiment, and might, if the engine had been at work for a sufficient length of time, have caused an explosion. Upon Mr. Newby being taken into custody, he asked Sir William what he was charged with, and he replied a malicious trespass.

After the engine had been stopped, Sir William ordered Mr. Newby and Walker to be taken at once to Bishop Auckland. They had not, however, proceeded a great distance upon the road when Mr. Newby complained that his handcuffs were too tight upon his wrists, and were exceedingly painful. On the policeman giving an assurance to Sir William that he would produce his prisoner at Bishop Auckland, the handcuffs were taken off, and one of Mr. Newby's own horses having been procured, he mounted and proceeded to Bishop Auckland. When they arrived in that town, the prisoners were taken to Mr. Trotter's office, before R. A. D. Gresley, Esq. Sir Wm. Eden was also present. It appears that, as soon as Mr. Newby was taken into custody, a friend of his went down to the Shildon Station and telegraphed for Mr. H. Marshall, solicitor, to proceed to Bishop Auckland. Mr. Marshall not having, however, yet arrived, Mr. Newby applied to have the case postponed for a short time, in order to give him an opportunity of doing so, but his request was not granted.

Sir William stated that the charge he had to bring against Mr. Newby and Walker was for a breach of the peace. Mr. Newby then observed that Sir William had charged him, when taken into custody, with a malicious trespass. The policeman, Caygill, proved having ordered the accused to desist from working the engine, and that Sir William ordered them personally to desist, but they refused in both instances, and in consequence they were taken into custody. Mr. Gresley said that disobeying Sir William's orders was clearly a breach of the peace; but that, as Sir William Eden could not adjudicate upon his own case, he would bind the accused over to keep the peace. This was accordingly done, and they were then liberated.

During the afternoon of Saturday, Sir William Eden ordered the engine and machine to be drawn out of the stack-yard;

but the men in the service of the Implement Company having learnt that such an order was about to be carried out, immediately put the machine out of gear, and it could not, consequently, be moved. The engine is still on the premises, and, under legal advice, Mr. Newby has determined to proceed with the thrashing. He has also commenced legal proceedings against Sir William Eden.—*Durham County Advertiser*, Nov. 7.

THE AMERICAN HARVEST.

For many reasons British farmers take a lively interest in the progress of the grain crops of the United States. First, because a large proportion of our agricultural labour is annually abstracted, to till the newly-cleared lands of the United States; secondly, because we always receive some portion of our food supplies from America; and, thirdly, because the large interchange of produce and manufactures renders a prolific harvest on the other side of the Atlantic an earnest of increased orders to our manufacturers and merchants, and gives additional employment to British and foreign tonnage.

Last year 1,278 ships, registering nearly one million and a-quarter of tons, entered our ports from the United States; and as many, or more, cleared out. In the same period 270 British-owned ships, measuring 167,586 tons, also entered our ports from the United States; and 417 vessels, of 297,717 tons, cleared out for American ports. Furthermore, from 6 to 6½ million cwt. of American cotton is yearly required for our mills, while we only receive about one million and a-half from other sources. For another article of large consumption—tobacco—we also depend chiefly upon our American brethren; for of about 39½ million pounds of manufactured and unmanufactured leaf imported in 1855 nearly 38 millions came from America. We also draw from thence large supplies of cured provisions, breadstuffs, and products of the forest. We had occasion, a couple of months ago, to enter into the statistics of the American flour trade, and we have now sufficient reliable data before us to go into details as to the late wheat harvest there, and the general produce and export of breadstuffs. American estimates, both before and after harvest, are generally much inflated, and so widely irreconcilable that it requires very careful analysis to generalize and arrive at any safe deductions. The most extravagant reports of the wheat crop were put forth last autumn, and estimates ranged from 175,000,000 to 230,000,000 bushels; while some writers were sanguine enough to suppose that the United States would have about 125,000,000 bushels to spare for export!

The total wheat shipments, in bushels, including flour, figure as follows during the last eight years:—

Year ending June 30.	To Great Britain. Bushels.	To all Foreign Ports. Bushels.
1849........	5,841,855	12,068,109
1850........	2,170,811	7,535,901
1851........	5,616,498	12,438,400
1852........	9,709,827	16,691,235
1853........	10,514,573	18,494,731
1854........	16,189,508	28,148,595
1855........	1,344,775	6,821,584
1856........	18,000,000	26,314,759

The shipments of flour have continued pretty steady; but reducing the whole to wheat, the exports this year are less than in 1854 by about ten per cent.

Instead, therefore, of about 125 million bushels of wheat to spare for shipment, the American imports will only reach about 30,000,000 bushels, this year, although a decline in prices has somewhat stimulated shipments lately. While rates in this country have kept up remarkably well, there has been a fall of fully 33 per cent. in prices on the other side of the Atlantic. Flour, which in 1855 fetched 7 d. 87 c. to 8 d. 52 c. per brl., this year only realizes 5 d. 75 c. to 6 d. 10 c., and the decline in wheat is from 2 d. 20 c. per bushel last year to 1 d. 30 c. to 1 d. 60 c. per bushel this year. Twelve per cent. of the crop of wheat seems to be about the average shipments that can be looked for usually from America. Wheat is much more generally used in the States than formerly, the consumption being now fully 120,000,000 bushels; so that even with a crop of 150,000,000 bushels there would be little more than 30,000,000 bushels for export—the amount shipped this year.

A careful review of the statistics of production for the last few years shows that vegetable food has not increased in the United States in proportion to the additional population; and, therefore, the unlimited power of America to supply Europe with food must be looked upon in a qualified sense. Two facts may be urged as a reason for this, namely, that the manufacturing and commercial classes in the States are increasing in a more rapid degree than those engaged in agriculture, and the town populations are also fast out-numbering those of the country and rural districts.

Comparing the decennial returns we recently published, the ratio of production of wheat had only increased 20 per cent., while the population in the same period had increased 36 per cent. Indeed there was a deficiency shown in all the crops except maize—that is, there was less raised than there should have been, in order to make the amount correspond with the increase of population. A large quantity of Indian corn (some 15 to 20 million bushels) is annually used for making whisky, which does not enter therefore into food at all; and a considerable quantity is also consumed for fattening hogs and feeding other farm stock. Maize seems, indeed, to be the only great and reliable American staple in breadstuffs, which keeps up and goes beyond the increase of population. From 1840 to 1850 the crop improved 57 per cent., from 377½ million bushels to 592 million bushels; and it has nearly doubled again in amount since then, the probable crop this year being about 800,000,000 bushels—worth, at half a dollar per bushel, more than £80,000,000 sterling.

Two-thirds of this immense yield will come from the Ohio Valley and its prolongations, embracing Western Pennsylvania, Western Virginia, Ohio, Kentucky, Tennessee, Indiana, Illinois, and Missouri. For the last two years the United States have exported 7 to 8 million bushels of Indian corn annually; in 1848 the shipments were about double that quantity. Should the habit of consuming Indian meal become general throughout Western Europe, like that of potatoes and tobacco, the export of this grain might be largely increased. There are few parts of Europe in which Indian corn can be grown, and therefore the main supply must always come from America. The soil and climate of every cultivated part of the United States seems to be admirably adapted to the culture of one or other of its numerous varieties, the short and intense summer of the north being sufficiently long to mature the short-stalked and yellow-grained species; while the longer season of the south ripens the tall and white-grained corn, in general use in the lower latitudes.

It is considered probable that at no distant period the United States may be able to export annually 150 millions of bushels of Indian corn, which would realize about £20,000,000 sterling, and prove a greater source of wealth than the golden harvest of California. When we reflect upon the fact, that the production of this grain in the States has nearly trebled in fifteen years, there is nothing unreasonable in anticipating that it will find a more extended market in other countries as it is brought into more general use. The price has fluctuated very considerably in the last seven or eight years, having been as low as 27 cents per bushel in 1849, and as high as 95 cents last year; while now the quotations are about 61 to 62 cents in New York.

We do not anticipate that Russia will be able to supply much wheat to Europe for a year or two; the drain on her population by the late war—the havoc committed on the Black Sea shores and the sea of Azoff—the withdrawal of effective labour for military display, and to swell the ceremony of the recent coronation, will materially check production, and retard the progress of cultivation. The Danubian provinces may, however, still have a surplus to export; but France, Prussia, and other countries will look therefor supplies, as the harvest of the Peninsula is very deficient.

The great irregularity of prices is one of the drawbacks to the extended culture of wheat in the United States, which cannot, like Indian corn, be turned into cattle and hogs for export.

Available labour, probable demand, and remunerative prices are essential elements of consideration in the calculations of the cultivator; and as the agriculture of a country cannot be changed in one or two years, it seems evident that we must not depend on America for any larger amount of wheat supply.

We require, on the average, about 3,000,000 quarters of foreign wheat to make up our supplies, and as much more of other grain, besides about 3,000,000 cwt. of flour; and it is doubtful whether the United States can furnish us with this quantity, unless prices are more remunerative. The nearer markets of the Baltic and the Black Sea will probably in subsequent years still be drawn upon pretty freely.

HARVEST HYMNS.

I.

O Father, who providest all
  Thy children need below—
Whose gifts of love more freely fall
  Than faithless hearts can know—
To Thee, with glad and grateful heart,
  Our harvest hymn we raise;
As Thou dost all our wealth impart,
  We yield Thee all the praise.

Though some may feel Thy bounty less,
  Not one may dare complain;
Since only where Thy word will bless
  Springs up a single grain.
The rain doth fall at Thy command;
  With Thee the winds abide;
The shadow of Thy wrathful hand
  The sun itself would hide.

O Father, grant that year by year
  We may more grateful prove:
Trust Thee for all, and only fear
  To lose Thy saving love.
May we our hearts more truly give
  To learn and do Thy will;
Not for ourselves, but others live,
  And so Thy law fulfil!

II.

Once again a plenteous harvest
  Fills with joy our favoured land;
And before our Father's presence,
  One and all His children stand,
Songs of praise together singing,
Grateful vows together bringing.

Though His love too oft forgetting,
  We to sin and self incline;
Still upon the just and unjust
  Maketh He His face to shine;
Still with mercy's ample measure
Dealeth forth His heavenly treasure.

Lessons sweet of love He teacheth
  In the season's glad return;
Bidding hearts and hands that languish
  Hope and consolation learn.
For the harvest, sown in weeping,
Cometh to a joyous reaping.

And His voice of solemn warning
  Cometh forth from every field
To the souls that live unwatchful,
  Or to sinful pleasure yield:
"Daily life is daily sowing—
Heaven or hell in all is growing!"

Now to Him who giveth all things,
  To our Father and our King,
Raise we heartfelt adorations,
  While our grateful vows we bring.
Hallelujah! Hallelujah!
Hallelujah! still we sing!

Amen. L. T.

ON REARING FARM HORSES.

In the breeding of farm horses, it may be made a rule that foals be dropped in May, as the grass season is at hand, to afford the necessary succulent food and exercise. It has been observed that early-dropped animals generally thrive best, and continue the most forward ; but they are attended with more trouble, as the provision of succulent and juicy food is indispensable for the secretion of milk in the dam. In the case of horses, this provision is more difficult than for cattle, and the animal is not so well adapted by nature for receiving it : so that the near approach of the grass is more necessary in the former animal than the latter. It may also be held as a rule that a brood mare should not undergo any labour, nor even any breaking, except to be led in a halter. Breeding may begin with the female at the age of three years, and may go on with scarcely a year's interruption. Every farm of 400 acres and upwards should be provided with two brood mares ; one for producing horses of a finer order for the road, the carriage, or the hunting field, and the other for farming purposes exclusively. The latter animal may be used in easy work, in carting the turnips and roots in winter to the cattle in the yards, and in summer in carting from the field to the homestead the green food of clover and vetches. The animal that is kept for finer purposes must live wholly idle, and be devoted to the one use. For this purpose a grass paddock must be provided, with a shelter-shed and a good supply of water. During the period of suckling, which may last for five or six months, the dam must have an unlimited supply of succulent food, and the natural herbage of the grass paddock may be assisted by artificial provender, as clover and vetches, placed in racks. The variety of food will be useful.

It has been proposed, and it has been practised, that the mare and foal have the choice of eating dry corn, afforded them in a manger under the shelter-shed. There can be no doubt that grain must prove useful to the foal so soon as the teeth can chew it, or the mouth is able to mumble it ; and by having the choice to eat it at pleasure, it will be early taught the process of chewing and grinding. It is also necessary that the male animals be castrated in their infancy ; the parts are more tender than at a more advanced age, the operation is less severe, and the growth of the animal sustains a shock that is easier to be borne, and more speedily surmounted. The risk of danger is also very much lessened.

The grazing season may be prolonged till the beginning of November, or later in sheltered situations and in mild seasons. The foal, being separated from the dam, must be put into a yard in the homestead, properly provided with a shelter-shed and a supply of fresh water. No more than two animals may be put together, as the smaller the number of any animals that are put into one place, the better they generally thrive. All young animals require much attention on being taken from the dam. The foal must have bran-mashes regularly and abundantly, boiled or steamed food, and also a feed of dry grain. Succulent or juicy food is indispensable, in order to resemble the food the animal has so recently left. If convenience suit, the grazing paddock, or more than one, may adjoin the farmery ; and in that case the young animals may remain there during the winter, the prepared food being supplied to them in a fresh state daily. Barley and potatoes, boiled or steamed, and carrots, will be of great service in supplying the nutritious juices, cut chaff and corn being also given with them. Ample littering is also necessary, and the dung in the shed to lie long unmoved, in order to afford the greater warmth.

In the spring, so soon as the grass affords a sufficient bite, the young animals must go to pasture, and the field must possess the advantages of water and a shelter-shed. This last accommodation, though not generally provided, is very advantageous for all kinds of stock : it affords a protection against the scorching heats of summer, and a refuge against the storms and rains of winter. The shed should face the four quarters of the heavens, as then it would afford shelter against the winds of any direction. It should have a locked department in the centre, for the purpose of keeping the provender in store, to be given out as it is required.

During the second winter the young animals may be put in a yard at the farmery, and amply fed and littered. Potatoes, Swedish turnips, and carrots may be very usefully given with cut-chaff and corn. Full feeding and comfort are most essential.

In breaking young horses to work, two methods may be adopted : By the first, the animal is housed during the first winter, tied by a halter in a stall, and regularly accustomed to being handled. The young horse is thus broken by degrees ; and when he is required to be yoked in the harrow, cart, or plough, very little more trouble is experienced. By the other way, the animal is never housed nor touched for four years, and then he is broken at once to the required purpose. The first method has the chance of affording the more quiet and steady animal, but dull and inanimate and often badly mouthed ; it also tends to break the spirit of the horse. The second method will yield a more fiery animal, better mouthed, and more durable, from his having acquired the invincible stamina of spirit and energy for such a long space of time undisturbed. For riding and carriage horses, the latter method is decidedly preferable ; for the quiet work of a farm, the former may be eligible. The horse is not able to do full work till he be six years old.

It has been mentioned that farmers who possess a farm of 400 acres and upwards should breed horses of two kinds ; so all farmers below that mark should breed work horses, which may be sold, when not required to replace the old and worn-out ones on the farm. Animals that have been bred on the farm have a great advantage over strange ones, confirming the identity, as was before noticed, that has been observed to exist between the animal, the soil, and the climate. Every farm should breed all animals which it employs in work, and all which it fattens, rendering it a regular manufactory or workshop, which possesses the necessary elements, and is wholly employed in the fabrication. The idea that one person can breed animals at a cheaper rate than another, from some supposed advantages of soil and situation, is carried much too far. There is no doubt that such differences do exist, but not to the extent that is supposed: it arises in a very great degree from the genius of the people being turned in that direction. Any farmer may be a breeder and a feeder of animals, if he turns his attention to the acquisition of the knowledge that is necessary to plan and conduct it, and to the provision of the physical means that are required for the successful development. But if these wants are not supplied, and if they be not judiciously and perseveringly administered, failures can only ensue, as experience has fully proved.

The horse is not a long-lived animal, yet with fair treatment he will serve the purpose of the farmer for at least ten years, reckoning from the age of five years. He can work daily for the space of ten hours; commencing at six o'clock in the morning, and stopping at twelve, resting two hours, and then going on until six at night. He must be amply and regularly fed; have an unlimited supply of cut provender in winter, and in summer of clover and vetches, with not less than two bushels to each horse weekly, and given at three different times: in the morning before going to work, in the noon hours of rest, and in the evening. A portion of beans may be mixed with the oats, as they contain the tannin principle, and serve to bind the muscular frame. In winter, when horses return from work in the evening, a warm feed of roots, as steamed potatoes, will be very useful. In winter, horses can work from eight in the morning to darkness in the evening, with an hour's rest and a feed of corn at noon. Long hours without feeding are hurtful. Regularity in feeding is a very great advantage: the same hour of feeding should be observed, and the same quantity of food given. On the same principle, the work must be regular and uniform, the hours of work steadily prescribed and executed, and the pace, or rate of execution, must be uniform. In conducting business of any kind, arrangement is of the very first importance, if it be made with skill and judgment; for if the arrangement be confused, the whole process will become languid and disjointed, get lax, and ultimately fail. For the proper performance of farming work the horses must be kept in good order—"above their work, and fierce as lions." The latter quality is often acquired by superior breeding; and good feeding must be made to produce it, if possible, where it is wanting.

The works of Nature do not produce a more noble or a more useful animal than the horse, and there is none liable to greater hardship and ill-usage. Cruelty to animals exists only in civilized life, and civilized life "only" requires the assistance of laws to protect the brute creation. The savage of the desert shows a humanity to the animals that serve him, and the most untutored mind is ever seen to be most sensible of feeling towards the willing slaves of its superior organization. In no case whatever must cruelty, necessary or unnecessary, be allowed. In farming operations, a proper and gentle correction with the whip or the rein may be tolerated; but any beating of the animal with sticks or rods, and kicking with the feet of the driver, must be immediately checked, and very properly rewarded with dismissal from office. The farmer should make known to his ploughmen that such is his rule, and that it will be readily enforced. Conduct more disgraceful cannot exist; a feeling more degraded cannot be imagined. He who practises such cruelty is a disgrace to human nature, and he who tolerates it is his most worthy companion. In no point in the whole circle of agriculture should the master's authority be more strictly and even vigorously exercised. The offence admits no excuse—it is wholly unpardonable.

The farmer must be again reminded that all success in the breeding of animals is based on the selection of the parents, and on the treatment of the progeny. We again lay down the fundamental axiom that "like produces like"; and this maxim applies not only to the production of the qualities of external form and utility, but to the constitutional vigour and the predisposition to disease. Experience has most fully shown that no animal we breed is more liable than the horse to transmit blemises as well as beauties, and that diseases of all sorts are transmitted to the progeny; if not in the first generation, they very speedily appear in that immediately succeeding it. This consideration increases the necessity of a judicious selection; for the propagation of diseases of any kind is even worse than the continuation of unsightly forms and of condemned points.

The mare from which the farmer intends to breed must be free from disease of any kind; carcase roomy, barrel wide, large, and round-formed, with the ribs curving from the back; the short rib "well home," or leaving a small space between it and the hook bone; thighs deep and muscular; bone of the hind legs flat and thin, clean of rank hair, and must have no appearance of swelling or any kind of thickness; feet clean, firm, and sound; pasterns short, but not thick and greasy; the arm in front wide and brawny; chest deep; shoulder oblique and sloping backwards at the withers, and shortening the back; top of the shoulder narrow; neck rising in an arched form from the withers, and drooping a little from the set-on of the head; crest strong and firm, and thickening downwards; ears long and fine, and quick in motion; eye prominent, quick, bold, and lively; face broad between the eyes, and tapering to the muzzle; cheek-bone not very broad, which shows coarseness; muzzle small; lips short and thin; nostrils expanded, but neat; fore-legs standing well forward, and not under the belly of the animal; bone clean, and short in hair; feet standing concave, and not flat; knee-joints flat and broad. colour of the animal, black or black brown, with white in the hind feet, but no more. A variety of colours shows much descent. Horses that are white in colour, or even having a white hair mixed in the coat, as grey horses, are reckoned to be delicate in constitution, and experience seems to confirm the observation.

The most objectionable points that the farmer has to guard against are heaviness of form and dulness in action, and round, heavy, hairy legs. These latter indicate disease, and never fail to constitute a dull lumbering animal, with a sluggish motion, and a funereal pace. In order to remedy this defect, ample elements exist, so soon as the farmer is able to divest himself of the idea that bone and flesh constitute strength. A heavy belly or a great depth of rib is also objectionable, showing a great quantity of offal to be carried about in a loose state, in the shape of guts and entrails. A main point in breeding lies in reducing the size of useless parts, and in getting rid of unnecessary appendages, and the lightness of offal ever forms a point of excellence. Huge bulks must be reduced, and it always formed a leading point with our first breeders to reduce the size of the animal, in order to acquire symmetry and compactness; it being an invariable law of nature that bulk is always attended with a corresponding degree of coarseness. This point, however, must not be carried too far, as has often been done in the case of animals that are fattened for the sake of the flesh—a smallness of size is not so objectionable, as a greater may be kept; but with working horses the case is very widely different, where a certain degree of size is indispensable, in order to effect purposes where a specific strength only is applicable. The object of the farmer, therefore, is to retain a certain size in the animal, and to impart to that bulk the necessary points of muscle and spirit. But this point cannot be gained without reducing the bulk in some quarter; and that reduction must take place in the useless parts, in the quantity of bone, of offal, and of flesh, and the increase must be made in the necessary parts of muscle, spirit, and action. The productions of nature are so varied, that ample store of the elements almost everywhere exists; one animal is found of a finer form than another, produced by nature or by chance; and these varieties afford the instruments with which the further improvement is effected. No organ in the animal body shows the result of a superior organization more quickly or more durably than the eye: in every case of breeding it is prominent, pert, and lively, and forms a point of great importance in the selection of animals When the body is in a state of inaction, the visual organ should appear placid and easy; but when any symptoms of exertion are required, the eye must give the first signal, and communicate to the other parts the intelligence that the time of action has arrived; and these parts must be ever ready and willing to obey the summons, by being closely knit and joined in combination, compact and ready for action, and not loose or disjointed, or far between. A horse may be called society in miniature, the component parts of which must be refined for action and polished for use, and adjusted so that each part assist the other in the most direct, the most rapid, and the most precise combination. These qualities are obtained under the name of "spirit and action," and proceed from a superior organization, produced by the assorting and joining the similar parts in combination.

The qualities of the male require a similar examination; for though the best animals are usually kept for the purpose of propagation, yet a discrimination is essentially necessary. The animal must be clean-legged, with a flat thin bone; barrel rounded, and carcase rather light; lofty oblique shoulders, tapering withers, arched neck, and a small head; eye impetuous, but at the same time placid; ears fine and quick in motion; jawbone narrow, and the muzzle tapering. Colour black, or black-brown; the hind legs white a little above the pasterns: a white dot on the forehead, and a white stripe down the face, are no objections; but any further mixture of colours must be rejected. It is a sign of hardihood when the legs are darker in colour than the body. The grey colour of the horse is fashionable; but unless the colour be very dark, it becomes white in age: and experience has shown that colours having even a slight degree of white in their composition denote feebleness and delicacy in the constitution of the animal. The black-brown or dark bay seems to be the hardiest of all colours; and an animal of that sort, when well bred and of a uniform colour throughout, shews a production of skill and judgment.

The farmer having, by the exercise of his professional skill, obtained a valuable progeny, the rearing of it demands equal care and attention with the propagation, or his purpose is only half effected, and the neglect of the one part will render the other useless and of no avail. The finest forms are destroyed—the most unbounded spirit and action are broken down and annihilated by bad usage and carelessness. An ignorant consorting of the elements of propagation, and a starvation in the rearing, produce a race of animals to be seen in our fairs—a specimen of ignorance, and a disgrace to the agricultural occupation. Farmers are almost universally possessed with the idea that animals must be starved in order to be reared, and kept at little cost; and certainly a more fallacious idea cannot be entertained on any subject of the kind. Ample feeding and comfort are essential to the rearing of animals of any sort; feed the dam while she is employed in suckling, and she will nurse her progeny. In subsequent years, the young animal must have an ample supply of food suitable for its age, and enjoy at the same time the accommodation, comfort, and warmth that are necessary for developing the effects of the food it eats, as without the latter provision the former may be in a great measure paralysed. The successful rearing of animals also requires a suitable provision of accommodation, in the shape of farm buildings, without which the food cannot be economically used or administered, nor the animal derive the full benefit. The want of suitable accommodation is very justly urged as an impediment to good farming; in point of good breeding and rearing it forms a very serious obstacle. The landlord starves the animal, for want of comfort and shelter in the farm-building; and the farmer repeats it in withholding the proper food. J. D.

AGRICULTURAL EDUCATION.

While our Government has its Board of Trade and its Department of Practical Art, and nearly every town has its Chamber of Commerce and its School of Design; while the cotton, the silk, the wool, and the iron "interests" have their stated "returns," agriculture, yielding to none of those interests in practical importance, or the dignity of scientific status, has, in the words of one of its most distinguished and learned followers, "no history, no statistics, no representative, in the land or the state; no board, no minister, no deparment; in fact, as Mrs. Gamp says, 'no nothing.'" Why this is so, and why, with a supineness and indifference on the part of agriculturists marvellous to witness, it is likely to be allowed to remain so, is a question demanding, and worthy of, a full and free inquiry. The result of this would be to show that, while much of the neglect which agriculture sustains is traceable to the indifference to and ignorance of all matters connected with it, maintained by the general public, it is chieffy attributable to the conduct of its own followers.

Why the general public should have, for so long a period, maintained an opinion so derogatory to the dignity and commercial importance of agriculture as a calling, or profession—if, indeed, they deem it worthy this distinction—is difficult to imagine. We are essentially a country-loving people, not merely in the sense of patriotism, as deeming our "tight little island" the perfection of countries; but as having an intense admiration for country scenes, or country life and its varied charms. Those who, amid the "turbid air and chaos of eternal smoke," of our great cities, are condemned to listen to, for eleven dreary months, the great city's eternal din and clatter, sigh for the time—alas! so short and fleeting in duration—when they can fling aside the ledger and bid adieu to the dingy counting-house, and fly to the green fields and the pure air of their rural retreat. This sentiment—perhaps, with an immense majority, but a sentiment after all—pervades our literature: novelists descant upon, and poets sing of the pleasures of a country life. The occupations of the farm are not deemed unworthy the care of a monarch, or a prince, or of our statesmen and our warriors. Our nobility take their titles from their lands, and derive their princely revenues from the produce of innumerable farms; nor less do our "merchant princes," and our "cotton lords," participate in this universal feeling; with all, the main object of ambition is to be the possessors of an estate; and the day-dream of the less wealthy shopkeeper, and the ever-recurring thought of the industrious mechanic, is the time when the care of the one and the labour of the other shall bring them to the cultivation of the "snug farm," or the enjoyment of the little plot, with its cottage and its tiny garden. Yet, notwithstanding all this, and the daily evidence with which the general public are surrounded, of the profuseness with which agriculture flings around her the delights of romance and of tender sentiment, as well as the substantial and more readily appreciable gifts of material wealth and comfort, the art, profession, trade, or science (call it what you will), was looked upon as one of little commercial or political importance; and its followers are characterised by none of the enterprise and ingenuity of their more forward commercial brethren. Nor in pointing to a "farmer" as the personification of "slowness"—to use a new word, greatly in vogue at the present time—did their mean opinion end there; indeed, the very name, "farmer," conveyed to many the notion of ignorance, and ignorance maintained by prejudice. This opinion tinged the very "dramas," and gave a bias to the novels of our modern time, these were of course the products of mere men-about-town, who delight in depreciating the importance of agriculture and all connected with it. It is only recently that these opinions have become modified, and this the result chiefly of a chain of fortuitous circumstances which have forced upon the public mind a clearer and a truer estimate of the importance of the art—of which circumstances, perhaps, the Great Exhibition of 1851 was the most important. It is of this that d'Lavergne (a well-known and graceful writer in the "Rural Economy of Great Britain") has the following. *En passant*, we may here notice the following fact, that while our own countrymen are content to remain in "ignorance," or to be fortified by "prejudice" as to the real *status* occupied by agriculture, the most intelligent of foreigners are thoroughly alive to, and most forcibly struck by, the high scientific skill, no less than the business energy and commercial enterprise displayed by our farmers as a body. Here is the passage above alluded to:—"When the Great Exhibition attracted to London an immense concourse of the curious from all parts of the world, strangers were struck, but not astonished, at the great industrial and commercial power of the English. People generally were prepared for the great shows which the productions of Manchester, Birmingham, Sheffield, and Leeds, made under the transparent roof the Crystal Palace; and also for that other and not less wonderful sight, the docks of London and Liverpool, with their immense piles of warehouses and countless shipping. But what caused surprise to more than one observer was, the agricultural development displayed in those departments of the exhibition set apart for implements of husbandry and English agricultural produce." If this struck the attention of strangers, no less did it strike that of our own people; and to it we may attribute much of the increased, and increasing, attention which is paid to the development of the resources and the skill of British agriculture, and of the higher estimate of the worth and ability of the British farmer which we so gladly see beginning to obtain amongst those very classes of the public whose indifference we have already alluded to. Not long, we fondly hope, will the "good time" be of "coming" when the belief of foreigners will be widely amongst us shared in; that "as poverty is not an attribute of English agriculture, no more is ignorance;" and that "the whole secret of English farming lies in those two words—*capital* and *skill*."

But the existence of this peculiar state of matters is, as we have already pointed out, not a little attributable to agriculturists themselves, including not farmers merely, but proprietors of land. They have been too long characterized by that want of *corps d'esprit* in matters connected with their profession—have ignored, or been ignorant of its claims, to be considered a science, and have frittered their organization in political strife, which has, alas! brought little advantage in its train, except one; and this, although no positive, is a negative advantage of great value, namely, showing that attention to the advancement of their art is better far, and productive of more solid recompense, than political influence or party collisions. But at one period farmers well merited the stigma attached to them by those of other callings, and which, as we have seen, has been so widely, and is yet too extensively diffused—of being slow—opposed to improvements—and jealous of all disturbing influences on their practice. One not otherwise slow to bear good praise or give high credit to agriculturists—where he deemed they deserved it—and who was thoroughly competent to give an opinion, thus spoke of them—"Trained up in ancient methods—attached generally to conservative ideas in every shape, the practical agriculturists, as a body, have always been more opposed to change than any other large class of the community. They have been slow to believe in the superiority of any methods of culture which differed from their own—from those of their fathers—or from those of the districts in which they severally live; and even when the superiority could no longer be denied they have almost been as slow to adopt them." Nor must we, in justice to the farmers, overlook the landowners, whose duty and privilege is, or ought to be, the promotion of all agricultural improvements, and the encouraging of their tenants in availing themselves of these. Although we can point to some brilliant exceptions—and these fortunately adding to their number daily—still the rule seems to have been that agriculture, and all matters connected with country interests and country life, have been the last things to which landowners have directed their attention, and in which they have cultivated that interest commensurate with their importance. "Instead of the farm-field," says that high authority Mr. Stephens, "the camp and the bar seem to be the favourite arenas for the young scions of the gentry to pursue their youthful career." Again, he remarks: "It appears extraordinary to those who have experienced difficulty in acquiring a competent knowledge of country affairs, to observe landowners, who have spent their lives in learning everything else, coolly undertaking to perform all the functions of country gentlemen without previous preparation." No wonder that such undertakings have been failures, and that the "functions" of a country gentleman have been too often understood to be the following the hounds with the whoop and the halloo, taking the chair at an agricultural (!) dinner, or the more congenial task of canvassing the county.

Agriculture seems to have been for long considered, by those most interested in its progress, as a pursuit somewhat to be ashamed of; reminding us of the Cockney grandee in his splendid suburban villa, who had no objection to receive the profits of his city shop, but was fearfully jealous of the fact of its existence being brought to his recollection by any of his dependants; and who, in his congenial moments, amidst his City chums, acknowledges it as a very good thing on the whole to get profits from, but not a thing to be proud of.

Although gladly pointing to the fact that this is all greatly changed, and daily becoming more so, still, seeing how scurvily in times past Agriculture has been treated by nearly all her followers, and by many "damned with faint praise," if praised at all, need we wonder at the general public being little interested in her progress, or tardily acknowledging her importance as a science and art? And here, also, we trace the cause of the indifference with which the theme of "agricultural education" has been for so long treated. Indeed, so long as this apathy on the part of agriculturists and their landlords existed, so long as they ignored the necessity for agricultural improvement, so long did they of necessity feel no want of a special agricultural education.

But, as we have before noticed, all this is materially changed, and, with the progress of scientific agriculture, has arisen on the part of its followers an earnest desire to carry out an efficient system of sound agricultural education.

In carrying out this "system," the principal difficulty apprehended is the education of the lower classes of agriculturists. We fear it is altogether premature, in the present state of the public mind as to the importance of the subject, to advocate the establishment of "special training-schools" in the agricultural districts, and this at the public expense. That these would, in every sense of the term, pay, we have little or indeed no doubt at all of—and this consideration should weigh well with those who set a price on everything, and who reckon everything according to what can "be made out of it," as the phrase goes. But in the absence of the probability, if not of the possibility of this, those interested in the subject will have to confine their efforts—till the good time does come—to modify the daily routine of our schools, so as to make their systems embrace such studies as will be useful in a practical point of view to the sons of agricultural labourers who may be attending the school in common with those of other callings. To aid in these special classes a set of class-books will be desiderated. These must of necessity be the work of thoroughly competent men—not only good, but cheap—such as Professor Johnston's Catechism of Agricultural Chemistry, as an exemplification of one style of books, and Richardson's Rural Handbooks, as exemplifications of another. Could a special class of agricultural instructors be organized, to visit the principal agricultural districts, and to examine the classes and suggest improved methods of teaching, or keep the master *au courant* with the latest improvement, and to these important duties add that of a lecturer to the adult population, not so much with a view to *educate* them—for lectures alone are powerless to do this—but rather to stimulate them to further inquiries, and to communicate some idea, however faint, of the importance of the science by which they gain their daily bread. Could this be done, a further step, and a highly important one, would be taken in the right direction.

To meet the higher and middle classes, the establishment of "chairs of agriculture" in *all* our colleges and universities would be of vast importance. Nothing, indeed, gives us a more striking exemplification of the position which agriculture has hitherto occupied, than the fact that this has been in very few instances carried out. These, however, would alone do comparatively little good—they would influence but a few, unless "special agricultural schools or colleges" were superadded. These would be to gentlemen who purposed following out agriculture as a profession, what the special "schools" are to gentlemen who follow out other professions. Through special schools they would not only acquire a knowledge of the theory and the principles, but become acquainted with the details of the practice of the art.

We have in these remarks merely opened up the subject. To view it in all its bearings, and to collect opinions and elicit suggestions by which the important desideratum shall be easiest and most speedily realized, is one important part of our duty as journalists, and one which we shall endeavour to fulfil. The subject is one environed with difficulties; but to the willing mind difficulties are easily overcome—and with the new ideas afloat in the public mind as to the utility of a knowledge of common things, and the absolute necessity of specially training our labourers in all departments to do their work well if we purpose retaining our national position, we have no fear of the subject dying away in interest, but that ere long we shall be able to train our agricultural assistants and labourers with a full knowledge of the importance of their task, and of the principles upon which its practice is founded.

R. S. B.

TREATMENT OF FARM-YARD DUNG.

We shall soon, amid the drenching showers of winter, have in our yards a large and accumulating portion of the manure of the farm. It will then occur to most of our readers, who have not covered homesteads, that from those heavy down-pourings, and consequent soakings and drainage, a considerable loss must be sustained—they will naturally feel interested in ascertaining the extent of the drainage and the best mode of escaping this loss. Now, as much erroneous reasoning has been employed on this great farming question, and as we have lately been favoured with some valuable researches upon this very difficult question, by Professor Voelcker, we can hardly apply ourselves to a more practical or generally useful inquiry. If on this occasion we merely abridge some of the results which attended these laborious experiments, it will at least serve to indicate the nature of the task which Dr. Voelcker undertook. The treatment of farm-yard dung in its progressive stages through the homestead to the compost heap, the injury it receives from its liquid portion being allowed to escape, the effect of fermentation in rendering the phosphate of lime of the dung soluble in the water in which it would not dissolve previous to the fermentation, the loss which dung sustains during fermentation, were amongst the leading objects of the Professor's inquiries, which are described by him at considerable length in the present volume of the Journal of the Royal Agricultural Society. He tells us, amongst other things, 1. That fresh-made farm-yard dung contains but a small proportion of free ammonia: it therefore, when used in this state, has lost little or none of its volatile matters. 2. That the soluble organic and inorganic matters are much more valuable as fertilizers than the insoluble portions; hence the great importance of preventing the escape of any drainings from dung-hills or yards. 3. He evidently doubts the extent of injury assigned to the practice of spreading compost over the surface of the land some time before it is ploughed in—especially on soils containing a sufficient proportion of clay. He thinks that as fresh, and even well-rotted dung, contains very little free ammonia, and as by spreading the manure active fermentation is prevented, so all further evolution of volatile matters is stopped—and even by a heavy fall of rain, on soils possessing a moderate proportion of clay, the effect seems to be merely that of carrying the soluble matter into the land; still we must not carry this doctrine too far, even on clay soils. "All I wish to enforce," the professor adds, "is, that when no other choice is left but either to set up the manure in a heap in the corner of the field, or to spread it over its surface without ploughing it in directly, to adopt the latter plan." 4. His experiments confirm the old conclusion, that in the fermentation of dung, a very considerable proportion of the organic matter of fresh manure is dissipated into the air in the form of carbonic acid and other gases; but that when the fermentation of dung is properly regulated, its progress is not attended with the loss of any considerable portion of nitrogen or of saline mineral matters. 5. He seems to have determined, amongst other matters of very practical use, that the phosphate of lime is rendered more soluble than in fresh dung. And as relates to the ammonia formed during the fermentation of dung that in the interior and heated portions of manure-heaps ammonia is given off; but that on passing into the external and cold layers of dung-heaps the free ammonia is retained in the heap; that hence it is not given off from the surface of well-compressed dung-heaps, but that on turning these over, it is then sensibly wasted. To these inquiries we may shortly have occasion to recur. They are all of the highest importance, and are precisely of that class which will aid the farmer, not only in his travels around the homestead, but when he is pondering over these things by his own warm and sunny fireside.

THE SELECTION OF JUDGES.

The meetings of various agricultural societies which grace the country, of eminent national importance both for the encouragement of breeding stock and the production of food for our teeming and increasing population, occupy, and have occupied, much and deserved criticism and attention respecting the comparative merits of those animals selected for premiums, and thereby declared as models for imitation, which those connected with the land should labour to produce. The prosperity of all such societies greatly depends upon the competent and upright decision of able judges; nor can a society possibly inflict a greater stigma on itself, or dig a surer pitfall for its destruction, than by allowing any person to be appointed as a judge in any department who is not known and universally acknowledged as "the right man in the right place." Born, as one might say, with an instinctive knowledge of the symmetry, property, points, and character of each description of animal; which has also been perfected by experience, and who, apart from any mere matter of compliment or favouritism, will pronounce that verdict which shall command the acquiescence of the people. The approaching meetings being chiefly for the exhibition of "fat stock," the task is somewhat easier, perhaps, than at other times, as much critical acumen is absorbed in the engrossing attraction, that

> "The carcase is fit for a painter to study,
> It's fat is so white, and its flesh is so ruddy."

But, *as to breeding stock*, we so ardently desire to see the Royal Agricultural Society of England, with its proud position and endless capabilities, alike increase its usefulness, and not impair its character, that having heard much comment pretty freely delivered in various quarters upon the unsatisfactory appointment of its judges, one is almost inclined to doubt whether such selections could be made at a full and competent meeting of those in whom the appointment rests. We would so respectfully suggest that henceforth new *practical* blood be infused among the great Leviathans of the Council, and that due notice be given of the day on which the judges are to be appointed, when, to insure due efficiency, it should be necessary that a certain number (say two-thirds of the Council) should be present.

IMPORTANT DECISION TO FARMERS.—A case of considerable importance to agriculturists was recently decided by Sheriff Davidson at Aberdeen. The pursuer (Mr. Mitchell), who is a farmer, near Hillhead of Daviot, purchased from the defender (Mr. Hunter), a merchant in Badenscoth, a parcel of seeds, as "perennial rye-grass seeds." He sowed them in two several fields, and had the first year a most productive crop. The following year, however, the crops on both fields were failures. Hence the action. Notice of the fact was duly given to the defender, and a demand for repayment afterwards followed, Mitchell alleging an absolute warrandice on the part of Hunter. The latter denied the construction put upon the warrandice, and the case went before the Court. The Sheriff gave judgment on the 3rd ultimo for the defender, assigning the following among other reasons for so doing:—"Any crop may fail from many, and perhaps indiscoverable, or at least unseen, causes, although the seed sown is the right seed and of good quality. And in this case, while there are other circumstances that may perhaps account for the failure, the pursuer has not attempted to exclude all causes, except an error in the kind of seed, by evidence either of the nature of the season or his own management, or otherwise, so satisfactory as he might reasonably have been expected to adduce. The evidence on this head is loose and inconclusive, and does not come from any persons who intimately and thoroughly knew the particulars of the history of the crop. From the evidence adduced it is impossible to conclude that the failure must have arisen from the seed not being perennial, and from no other cause."—*Edinburgh Courant.*

ANSWERS TO AGRICULTURAL QUERIES.

A correspondent inquires whether salt and soot, or salt alone, will be proper to apply to grass land for the purpose of killing moss? We beg to reply that either will be effectual enough; but the danger is that he will kill the grass as well, if enough salt is put on to destroy the moss. We would rather advise him to try a strong dressing of *lime, fresh slaked*, after the grass has been fed off, and *before* the manure is laid on. The lime will infallibly destroy the moss, and will also burn off the herbage of the grass; but the latter will come out in the spring of a much better quality, and the meadow will in many respects be improved in future by the process, as the roots of the grass will not be touched by it. If salt is used, it ought to be very sparingly, and mixed with soot or lime; but the latter will be quite sufficient without it.

Sir,—Having observed in your paper of this week a letter from a correspondent inquiring about the method of curing the tops of mangold wurzel and turnips, and feeling that the subject is of great importance to the farmer, I beg to reply to the letter by repeating, as near as I can, the statement I sent you three years ago.

London, Nov. 18. An Old Norfolk Farmer.

1. When the roots (whatever they may be) are taken up, cut off the tops close to the shoulder, taking the whole of the crown. Lay these in small heaps as they are cut.

2. Dig a trench fifteen feet wide, and as many feet deep as the dryness of the soil will allow; if in the field, as near the gate or road as convenient, in order to come at them the more readily without trampling on the land unnecessarily. It should also be near the ditch, to carry off the rain water that falls on the heap.

3. Put a layer of tops into the trench about three-quarters of a foot thick, on which sprinkle a quantity of salt, in the proportion of three-quarters of a pound to four cubic feet of the tops. Over this put on another layer of tops, also salted, and so on, each layer decreasing in thickness, on

account of the salt draining downwards. Tread them down gently, and bring them on a slope from the surface of the ground, so as to form a ridge on the top, keeping it steep enough to shoot off the water.

4. When the trench is filled, cover the sides with a thick coat of earth, beating it hard and smooth, and forming the ridge to correspond with that of the tops. As the moisture of the foliage evaporates, fissures will occur in the sides. These must be closely and constantly attended to, and filled up with fresh earth, and the sides kept smooth and sloping.

5. Cut a drain all round the trench, *sloping from its foot*, with an outlet into the ditch if possible. This will carry off all the rain water that falls upon the board, *provided the sides are kept perfectly close and smooth*, which is of the greatest importance; for if the wet gets to the bulk in any part, it will destroy the whole.

In six or eight weeks the curing process will be completed by the evaporation of the moisture, and the tops will be fit for use. About one bushel may be given (with other food) to a cow or bullock per day. All kinds of animals are found to be excessively fond of them, and will leave any other food for them. They are particularly adapted for milch cows; and the butter from the milk of those which feed on them is equal to the best grass-butter of spring. They may be kept thus until May or June without taking injury, if the above directions are carefully and constantly attended to. Everything depends upon that.

It is necessary also to choose a dry time for storing them, as they would be apt to heat if put in after rain, or in wet weather.

CALENDAR OF AGRICULTURE.

Plough stubbles for next year's green crops, and follow with the subsoil plough. Begin to plough leys for Lent crops. So long as the weather allows, cut drains, mend roads, and cast up earths for composts; make new fences and repair old ones, and clean out water-courses.

Collect earthy and vegetable matters of all sorts for the manure pit; gather mud and earths from roads for the compost heap; and at no time or season omit any opportunity, or neglect any quantity or substance, however small, that will add to the bulk of the most indispensable of all articles, in most cases more valuable to the farmer than money in his pocket.

Plant forest trees of all sorts; cut underwoods, and fill up vacancies by laying and planting (in hop countries, oak, ash, and willow are most suitable, especially the ash); keep plantation fences in efficient repair. Nothing more clearly evidences slovenly management than plantation fences broken down and open to trespass.

Flood meadows at proper times, and lay dry occasionally.

In some early situations lambs will be dropped this month: provide a very commodious shelter, and give the ewes full allowance of the most succulent food on the farm.

Take up turnips, and carry home for store during every opportunity of mild and dry weather: give the tops to store flocks.

During frosty weather thrash and deliver grain; carry stones for drains and buildings; collect earths; carry fuel, timber, faggots, and dung from the feeding-yards to heaps in the fields. Litter the yards as emptied; spread all substances evenly and thinly, and keep the yards dry and comfortable.

The winter being now set in, the live stock of all kinds require the most constant and vigilant attention. Provide ample littering both in the yards and stalls; give food in abundance, but not to waste; employ the steamer constantly, and thus afford cooked food daily to cows, pigs, poultry, and the work horses; give the food fresh done and rather warm; any acidification of the food cannot be recommended. Have by any possible means fresh turnips from the store pits, but in fresh weather best from the field. The construction of the yards must allow the cattle to eat under cover, except in warm climates.

All crops and animals should be insured, which is now so cheaply done, that the farmer is inexcusable who neglects to protect his property. The building being insured by the landlord, and all moveable property by the farmer, no loss can be incurred by any misfortune or accident. A clause obliging each party to effect the special insurances should be entered into every lease of land.

MANURES.

PRICES CURRENT OF GUANO, &c.

PERUVIAN GUANO (per ton)		£12 5 0	to £13 0 0
Do. D. first-class (damaged)		11 5 0	0 0 0
BOLIVIAN GUANO	(none)	0 0 0	0 0 0

ARTIFICIAL MANURES, &c.

Nitrate Soda (per ton)	£18 0 0	to	£19 0 0
Nitrate Potash or Saltpetre	29 0 0		30 0 0
Sulpht. Ammonia	16 0 0		17 0 0
Muriate ditto	22 0 0		23 0 0
Superphospht. of Lime	6 0 0		0 0 0
Soda Ash, or Alkali	0 0 0		8 0 0
Gypsum	2 0 0		2 10 0
Coprolite	4 5 0		4 10 0

	£ s. d.		£ s. d
Sulph. of Copper or Roman Vitriol, for Wheat steeping	42 0 0	to	43 0 0
Salt	1 5 0		2 0 0
Bones, Dust, per qr.	1 5 0		1 6 0
Do. ½-inch	1 4 0		1 5 0
Oil Vitriol, concentrated, per lb.	0 0 1		0 0 0
Do. Brown	0 0 0¾		0 0 0

OIL-CAKES.

Linseed-cakes, per ton—			
Thin American, in brls. or bags	£11 5 0		£11 15 0
Thick do. round	10 5 0		10 10 0

Marseilles	£9 10 0	to	£10 0 0
English	11 0 0		11 10 0
Rape-cakes, pr ton	7 0 0		7 10 0

Pickford & Keen, 35, Leadenhall-street.

Williams & Co., 24, Mark Lane—Azotic	£6 10 0

Manufactured by Hodgson & Simpson, Wakefield, and
Matthews & Co., Driffield.

Ammonia-Phosphate and Nitro-Phosphate	per ton	£8 0 0
Superphosphate of Lime	,,	7 0 0

Agricultural Chemical Works, Stowmarket, Suffolk.

Prentice's Cereal Manure for Corn Crops	per ton	£8 10 0
Prentice's Turnip Manure	,,	7 0 0
Prentice's Superphosphate of Lime	,,	6 10 0

Lancashire Manure Company, Widnes, near Warrington.

J. Knight & Co.'s Nitrogenized Bone Manures	per ton	£8 15 0

Manure Works, Grovehill, Beverley.

Tigar & Co.'s Celebrated Turnip Manures	per ton	£7 10 0

METEOROLOGICAL DIARY.

Barometer.			Thermometer.			Wind.		Atmosphere.			Weath.
1856.	8 a.m.	10p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a.m.	2 p.m.	10 p.m.	
	in. cts.	in. cts.									
Oct. 23	30.35	30.37	53	58	52	E. S. E.	calm	fog	cloudy	haze	dry
24	30.45	33.48	48	59	49	E. by N.	fresh	fog	fine	cloudy	dry
25	30.48	30.44	47	53	43	E. by N.	gentle	fine	sun	fine	dry
26	30.44	30.38	33	55	38	East	fresh	fine	fine	fine	dry
27	30.37	30.32	32	56	36	East	gentle	fine	sun	haze	dry
28	30.32	30.30	32	53	36	E. by N.	breath	fine	fine	haze	dry
29	30.24	30.19	32	46	37	E. by N.	calm	fog	fog	haze	dry
30	30.19	30.17	32	56	47	S.W., S.E.	gentle	fine	sun	fine	dry
31	30.12	30.26	46	56	53	S.W., S.E.	gentle	cloudy	cloudy	cloudy	rain
Nov. 1	30.35	30.37	48	54	47	South	calm	cloudy	cloudy	haze	dry
2	30.35	30.25	48	55	47	S. by W.	gentle	fine	cloudy	cloudy	dry
3	30.25	30.20	43	52	42	S. by W.	gentle	fine	fine	cloudy	dry
4	30.20	30.30	35	45	45	N. and S.	calm	fine	fine	fine	dry
5	30.34	30.38	37	50	37	E. by N.	fresh	fog	sun	fine	dry
6	30.44	30.50	28	46	34	E. by N.	fresh	fine	sun	fine	dry
7	30.53	30.55	30	44	43	S. East	gentle	haze	cloudy	cloudy	dry
8	30.42	30.12	39	43	42	S. & N. E.	gentle	cloudy	cloudy	cloudy	rain
9	30.11	29.84	33	49	44	W. N. W.	gentle	fine	cloudy	cloudy	dry
10	29.60	29.40	32	43	35	North	gentle	cloudy	cloudy	fine	dry
11	29.37	29.42	28	42	36	N. West	airy	cloudy	cloudy	cloudy	showers
12	29.66	29.74	34	42	38	N. N. West	brisk	cloudy	cloudy	cloudy	dry
13	29.73	29.72	35	44	40½	W. N. W.	gentle	fine	sun	cloudy	dry
14	29.80	29.96	36	40	30	W. N. W.	gentle	fine	sun	fine	showers
15	30.00	29.95	28	42	40	W. N. W.	airy	fine	sun	cloudy	showers
16	30.12	30.22	30	38	28	W. or by S.	calm	fine	sun	fine	dry
17	30.21	30.10	27	44	33	South	calm	fine	sun	fine	showers
18	30.07	30.14	33	45	42	Variable.	calm	fine	cloudy	haze	showers
19	30.10	30.05	38	48	53	Westerly	gentle	cloudy	cloudy	cloudy	showers
20	30.04	30.05	43	51	42	N. West	airy	cloudy	cloudy	cloudy	
21	30.17	30.24	40	49½	47	N. West	airy	cloudy	cloudy	cloudy	

ESTIMATED AVERAGES OF NOVEMBER.

Barometer.		Thermometer.		
Highest.	Lowest.	High.	Low.	Mean.
30.270	29.080	62	23	42.9

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
48.61	36.66	42.16

WEATHER AND PHENOMENA.

October 23. Hazy and overcast.—24. A sprinkle. —25. Rich red sunset.—26. Rain.—27, 28, and 29. Rain; hazy.—30. Much warmer.—31. Rain at intervals; fall 0.38 cents.

LUNATION.—New moon 28th, 9h. 51m. night.

November 1.—Calm heavy day.—2. Sunny.—3. Sober, quiet day.—4. Generally hazy.—5. Lively keen air.—6. White frost.—7. Chilly; sudden rise of temperature before noon.—8. Rain after 2 p.m. —9. Changeable.—10. Overcast.—11. Changeable. 12. Lively, but overcast.—13. Sunny.—14. Shower in night.—15. Glowing sky at sunset.—16. Keen white frost; ice.—17. Changeable; night rain.—18. Smoky atmosphere.—19, 20, 21. Occasional showers.

LUNATIONS.—First quarter 5th, 5h. 22m. afternoon. Full moon 12th, 8h. 55m. morn. Last quarter 19th, 10h. 34m. morn.

REMARKS CONNECTED WITH AGRICULTURE.

The average temperature of October was so high, that the excess of cold in the 21 days of November has been corrected. Hence, our period is rather in excess of the mean of the latter. The rains have not exceeded, hitherto, the amount usually admitted for the 11 months ending with November. All the labours of the farm have been well performed. The young wheats are green and strong; the roots have been stored; but I have seen very few round turnips.

Croydon, Nov. 21. JOHN TOWERS.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

During nearly the whole of the month great heaviness has prevailed in the demand for wheat, and an important decline has taken place in the quotations. Much uneasiness has consequently been felt by the home-growers, and not a few of them have predicted a much lower range in prices. It is necessary for us to observe that consumption has not decreased; that our manufacturing industry is in a flourishing state; and that our artizans and others are fully employed. The fall in prices, then, may be traced to other causes. In the first place, we have had a sudden influx of foreign grain, both from the Baltic and the westward—an influx, however, not unexpected; and there has been an unusually heavy demand for money, with a considerable advance in the rates of discount, both on the part of the Bank of England and the private bankers. The utmost difficulty has been experienced in obtaining advances upon corn bills; and the demand for wheat, both for Spain and Portugal, has been almost wholly checked. These adverse influences have naturally had considerable effect upon the trade. Millers have purchased with extreme caution; and the bakers, seeing a decline in price, have refused to enter into contracts for the forward delivery of flour. The trade, in point of fact, has been completely paralyzed; still we must bear in mind that there is yet an enormous demand to meet, and when we carefully consider its extent, we feel bound to oppose the doctrine of very low prices. The progress of our manufacturing industry has possibly received a slight check, owing to the dearness of money; but in this particular there are improved prospects before us. We have received very large remittances of gold from Australia; and we have the satisfaction of knowing that the crisis on the continent has passed away. All that is now required to improve the value of produce in this country is a greater abundance of capital, which, in our opinion, is likely to be obtained in a very short period, provided that the actual wants of trade are considered, by those who have the direction of our monetary position, before speculative advances.

We have had a very favourable month for out-door farm labours, and the farmers have, consequently, been enabled to complete the sowing of their winter wheats, which, in several districts, have come up remarkably well. Some large quantities of wheat have been thrashed out and disposed of; the produce is represented as extremely various. Some of the red wheats have yielded well, but white qualities are much complained of. We believe, however, the total growth of the country is in excess of 1855 in quantity, though not in quality.

On the continent, the corn trade, influenced no doubt by the dull accounts from England, has become very quiet, and prices generally have given way. The imports of wheat into France, chiefly from the Black Sea, have been on a very liberal scale. In the United States the crops have proved abundant, hence heavy shipments of wheat, flour, and maize have been made to Europe, at moderate rates. Canada, too, has forwarded supplies considerably in excess of 1855 or in 1854.

Much of the barley lately thrashed-out has been very deficient in colour; nevertheless, there has been no want of supply of that article. The large additions to our stocks from the continent have produced great heaviness in the trade, and a corresponding decline in prices. All other spring corn, from the same cause, has been drooping. Indian corn, however, has commanded rather a brisk trade, at full quotations, although the arrivals have increased to some extent.

Large quantities of potatoes have reached the metropolis from Scotland, greatly out of condition; but the supplies from other quarters have decreased. The demand has been far from active, yet the best kinds have advanced to 110s. per ton.

The cattle trade has been less active, and, in some instances, prices have had a downward tendency.

Numerous failures of the carrot crop have been reported to us, and it is further stated that turnips are not so abundant or fine as in some previous years. Notwithstanding these statements, we feel justified in saying, when we take into consideration the enormous growth of hay and clover during the season, that the actual supply of food for winter use is unusually large. Evidently the great drawback to the graziers' profits is the high value of linseed and cakes.

The amount of business doing in English wool since we last wrote has been trifling; in prices, however, no change has taken place. The public sales of colonial, though extensive, are going ou well, at the opening advance of from 1d. to 1½d. per lb.

The hop market has been in a healthy state, considering the large produce and the high duty officially declared. Foreign hops are consequently thrown out of the market, though offered in bond, in London, at from £1 5s. to £1 15s. per cwt. The growers in Germany have produced a most extensive crop; but they have now scarcely any foreign demand to meet.

In Ireland and Scotland the corn trade has ruled heavy, at drooping prices. Fat stock has ruled about stationary.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

In a comparative sense, the cattle trade, both in London and throughout the provinces, has been much less active, and the value of inferior stock has tended downwards; not that consumption has decreased, even though money has been very scarce and dear, or that the lower classes have been unable to purchase their usual supplies of food; but two causes have operated against value, which may be readily explained. The first to which we may allude is the great falling off in the demand for both beasts and sheep in Holland on French account, and which has led to increased shipments being directed to England. This increase has not been to say extensive, nevertheless it has been productive of a much larger show of inferior stock in the metropolitan market, and thereby produced a slight fall in prices. On the other hand, prime stock has sold remarkably well, and full quotations have been realized for it without difficulty. The second cause to which we may direct attention is the steady increase in the receipts of Irish stock into this country from Ireland, and it must be satisfactory to learn that both beasts and sheep have come to hand in good condition; consequently, have sold at remunerative currencies. It would appear that many of the Scotch graziers who have settled in Ireland have wisely turned their attention to grazing: immense breadths of land, formerly laid down for oats, have been either converted into pasture, or cultivated for green crops. This remarkable change in the position of Ireland may ultimately produce a great revolution there—in other words, it will enable the country to possess within itself all the elements of subsistence, oats and potatoes gradually yielding before a superior mode of cropping and produce, without the fear of a recurrence of famine. That the potato will long continue to be a favourite food among the working classes, may be possible; but its unlimited cultivation, to the almost total exclusion of other crops, save oats, must ever be attended with considerable risk. Some of our most judicious writers have condemned the production of only one or two staple articles of consumption in any given country; and most properly so too, because a failure in them leaves no other resource to fly to, and the most fearful calamities are the invariable result. It may be said, however, that an increased production of live stock in the sister country will have the effect of reducing prices in this country. We much doubt this. Besides, why ought we to dread an increase in Ireland, when we are compelled to import largely from the continent? We may not be always in a position to draw stock from Holland: foreign complications of a disagreeable nature may arise by which our present source of supply may be dried up; consequently, the sooner we are in a position to meet every demand at home without foreign aid the better. Again, at certain periods of the year, it is almost impossible to import cattle from the continent; but the new source of supply in Ireland will enable us to meet every want without difficulty. It may be said that we are arguing against the interests of the English breeder and feeder; but this we deny, because we are strongly of opinion that steady prices under the influence of average supplies are by far more profitable to them than great fluctuations, which frequently lead to a great sacrifice of capital, from stock in a lean state being purchased at prices which can never be remunerative. Ireland has certainly a most splendid market open to it, and we are glad to find that the agricultural body in that country is making so profitable a use of their capital and industry.

Although the past has certainly been a good season for stock, and the supply of food has been considerably in excess of some previous years, the supplies of beasts received in London from Lincolnshire, &c.—though they certainly have carried more fat than in 1855—have been by no means first-rate. We learn, however, that a very large number of prime animals will be sent up next month; and it is stated that the show for Christmas consumption will be the largest and best ever known. There has been a considerable increase in the importations of linseed, in which an extensive business has been transacted; prices, however, have slightly receded, owing to the large quantities reported off the coast. Linseed and rape cakes have been request, and prices have continued very firm.

The amount of foreign supplies of stock received in the metropolis during the month has been as follows:—

Beasts	6,102	head.
Sheep	16,380	,,
Calves	1,152	,,
Pigs	309	,,

COMPARISON OF IMPORTS.

Nov.		Beasts.	Sheep.	Calves	Pigs.
1855	....	7,367	17,094	1,127	454
1854	....	7,120	16,604	1,108	369
1853	....	7,390	22,565	1,629	919
1852	....	3,102	18,152	1,215	427
1851	....	6,279	22,886	1,409	1,127
1850	....	5,928	17,662	1,058	1,486

The total supplies of home and foreign stock exhibited in the Metropolitan Market have been—

Beasts	24,711	head.
Cows	457	,,
Sheep	97,460	,,
Calves	1,585	,,
Pigs	3,535	,,

COMPARISON OF SUPPLIES.

Nov.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1855....	24,154	505	105,750	2,096	3,415
1854....	23,442	515	121,031	1,848	2,726
1853....	25,760	562	127,150	2,615	2,790
1852....	23,583	435	115,770	1,718	3,210

The bullock supplies derived from Lincolnshire, Leicestershire, and Northamptonshire have amounted to about 10,500 shorthorns; from other parts of England, 1,800 of various breeds; from Scotland, 330 Scots; and from Ireland, 2,850 oxen, against 1,550 in the corresponding month in 1855.

Beef has sold at from 2s. 8d. to 4s. 10d.; mutton, 3s. 2d. to 5s. 2d.; veal, 3s. 8d. to 5s. 4d.; and pork, 3s. 6d. to 5s. 4d. per 8 lbs., to sink the offal.

COMPARATIVE PRICES.

	Nov., 1855.			Nov., 1854.			Nov., 1853.		
	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.
Beef, from ...	3 4	to	5 2	3 4	to	5 2	2 6	to	4 6
Mutton	3 4	—	5 2	3 4	—	5 0	3 0	—	5 2
Veal............	3 6	—	5 4	4 2	—	5 6	3 4	—	4 8
Pork	3 6	—	5 0	3 4	—	5 0	3 4	—	4 10

Very large supplies of Scotch and country-killed meat have been received up to Newgate and Leadenhall markets; nevertheless, good clearances have been effected, and prices have for the most part been effected, as follows:—Beef, from 2s. 6d. to 4s. 4d.; mutton, 3s. 0d. to 4s. 8d.; veal, 3s. 6d. to 4s. 8d.; pork, 3s. 6d. to 5s. 4d. per 8 lbs., by the carcase.

NORTH NORTHUMBEDLANR.

The season has now so far advanced that we fondly hoped (ere now) we might have given a more favourable review of rural aspects over this northern district than in our last. Little can be added, we are sorry to record, in the shape of improvement. The weather during the entire month of October was characteristic of a sameness of which we have no recollection under similar circumstances for forty years. At least three-fourths of the cereal crops over this county were exposed in the fields, and after the wane of the floods (about the 1st), scarcely a breath of wind stirring a leaf to the last day of the month; generally a dense sea fog at night, with an hour or two of sunshine about noon; corn saturated with wet, and land so soft and damp that grain could not be spread out to dry, nor could a sheaf be left open overnight; the only resort was to shift the sheaves every day, which was both tedious, trying, and expensive. Towards the end of the month fields were nearly cleared of all (beans excepted), generally in miserable condition, "hope against hope" assuming that "windy days follow mint," and the small stacks would soon dry, but the windy element was quiet until the evening of the 9th inst., when a gale from N.E. sprung up, and has blown bitterly cold to the time we write, accompanied with heavy showers of hours' duration, which has again flooded many low situations and laid all the uplands under snow. Fattening and store cattle being necessarily taken to the fold-yard, thrashing becomes an absolute necessity, and grain in its present state marketed at a great sacrifice. In our provincial markets on Saturday wheat was sold at from 24s. at all prices up to 72s. per qr., and perhaps more for very fine dry Barley and oats also vary extraordinary in quality, value, &c. The yield is not complained of. Wheat is sowing on dry soils.

Fallows have generally been finished for a few days past, and partial instances of a good brand showing. Turnips have also been stored favourably and the land sown, but this week has put a stop to field operations. Swedes and root crops improved immensely during the last month, with the exception of potatoes, part of which have lifted extra fine, but fully half the entire crop are in a state that will not keep, and many rotted in the field. The species known here as red Orkneys are mostly a sound good crop, and we hope enough will be saved for ordinary use, the potato never having been cultivated to any extent over this district. Pastures and aftermaths kept fresh, and with a good bite, until within the last few days. Store sheep and cattle have been healthy and in good condition for wintering. Turnips and straw a full average, and for both fat and store stock demand good. Our markets well supplied. Workmen fully employed. Draining does not seem to slacken, nor does the value of land give way. Farms, where out of lease, are eagerly sought after, and let at enhanced rates. With all this before us, the past season has taught us a lesson that neither improved cultivation nor machinery can force a crop of extra bulk to market—all must depend on the decrees of Divine Providence, and we hope by the end of the waning year to see the agricultural horizon wearing a brighter hue.—Nov. 14.

NOTTINGHAMSHIRE.

We have completed the sowing of wheat, with the exception of portions of turnip lands, which are sown as the stock clears the ground; and a more favourable season could not be desired. Every available acre is again put under that grain, and a larger breadth than the average of years is again the result. Some have appeared above ground, and have come up even. These things augur well for the future. The general aspect of the county is that of luxuriance, and our grass lands are most abundantly supplied with fog. The turnip crop has very much improved; and should the present open fine weather continue, there will be an abundance. A more ample winter supply of food it has rarely been our lot to see; and this, coupled with the abundant hay crop gathered, places the farmer in very easy circumstances with his stock. The potato crop is mostly secured; and though a considerable portion is diseased, still we have an ample supply, and shall not lack for culinary purposes at a reasonable price. Stock is generally in good condition, and many will avail themselves of that circumstance, and fatten them out, the present price of meat being a great inducement to do so. Our cattle markets have been fully supplied, and dull, without much decline in value. Sheep still continue to fetch a good price, and, if our manufacturing prosperity continue, is likely to do so. Our corn markets are fully provided for, and wheats continue to decline. A good deal of sprouted and out-of-conditioned appear, and fine dry samples are scarce. At all our neighbouring fairs horses have been exceedingly high; good ones for draught especially so. At our hirings for servants, wages have again advanced, good men fetching £20 per annum, with board and lodgings; female servants £10 and £12, with some strength, and not much else to recommend them. A good demand still continues for farm-labourers, and as a body we consider they were never in better circumstances. May they continue so!—Nov. 17.

LEICESTERSHIRE.

The large quantity of rain which fell in the first half of October (amounting to 2.40 inches) greatly interfered with wheat sowing, and delayed it to rather a late period. Fortunately, in the space of the four following weeks a change occurred, and we had less than one inch of rain in that time. The land being generally in a forward state to receive the seed in case dry weather set in, great exertions were made, and a large breadth of wheat was sown, and went in well where people had patience to wait till the ground became sufficiently dry to receive it. The circumstance of so much rain falling in October caused this to be the principal wheat-seeding month, and that important work is now nearly completed. The land could not have worked better than it has done for the last two or three weeks, and the seed is now safely deposited in the ground with every prospect of favourable results. That which was early sown quickly appeared above ground, showing a regular plant; and, at present, we do not observe any circumstance likely to prevent its future progress. After further experience as to the produce of the late harvest, we see no reason to change our opinion as to the quantity, but we regret to say that the quality is not so good as we anticipated. Upon more extensively thrashing, both wheat and barley are found in many instances to come out in bad condition, and few samples are shown in which sprouted grains cannot be detected. From the drenching rains which fell in the middle of August, when a large breadth of corn was cut, but could not be secured, considerable damage to the quality was the consequence. Even the heavy crops that were not cut were laid so flat that the portion nearest the ground sprouted; and that in the sheaf was so saturated with wet that it suffered in like manner: from these circumstances, combined with the fact of some being put into the stack in a damp state, we find the quality of the grain much injured, and without a mixture of old or superior samples there is difficulty in making sound bread. This causes a wide range and variation in price, and, perhaps, there is a difference in value of nearly 20s. per quarter between the finest and the worst qualities; and fine dry samples are greatly in request. The weight of the grain, too, is affected by these causes, and we find it to be below an average, especially in barley. These crops appear to have suffered more than any other; and though they were full of straw and heavy, still they deceive their owners as to yield. There are two causes to be assigned for this result—first, the numerous blighted ears, which, in many instances, were unusually abundant; and secondly, the shedding of the grain during the wet weather. We have heard the loss estimated at four bushels per acre on account of each, which reduces the produce one quarter per acre—we are inclined to believe that in many cases this is correct. This is a serious drawback to the yield of this grain, and reduces it to a bare average of ordinary seasons, though at one time it was expected to prove an abundant crop. Though wheat is somewhat inferior in quality, we believe in quantity it will produce rather above an average. There has lately been a decline in the price of all kinds of corn, and the markets generally are in a languid and sinking state, and it is scarcely likely that the price of the last three months will be sustained. We do not expect that the importations of wheat will be excessive, as Europe has not yet recovered from the shock of the late war; and there does not at present appear to be any large stocks of grain in those countries from which we usually receive our supplies. We therefore do not anticipate low prices for some time to come; yet we do not think it good policy to hold corn on speculation at present prices. Wheat is now selling in our markets from 56s. to 68s.; barley, from 42s. to 48s.; oats, from 30s. to 38s.; beans, 50s. to 54s. per quarter. Out-lying stock has done well of late, as grass and lattermaths have been plentiful; but now, feeding beasts are for the most part in the stalls, or bountifully foddered in the field; but this system is less practised now than formerly. The making of good manure and in larger quantity is more attended to, and by stall-feeding this is effected. All kinds of store stock fetch high prices, and both beef and mutton sell well—the former from 6d. to 7d., and the latter from 6½d. to something over 7d. per lb. We regret that serious complaints are made as to the crop of swede turnips. In some situations disease attacked them early and they never recovered—the root is affected, and they make no progress; and though from the late growing weather the tops have freshened, the bulbs are of little value. We do not mean to infer that this is generally the case, as we observe many crops which are good and will yield a heavy weight; still there will be a deficiency in the gross produce; but we believe this will be the only instance of the kind in root crops as food for stock. Carrots and cabbages are an average, and mangel is the heaviest that has occurred for some years. We are glad to observe that the culture of this valuable root is becoming more general, and a larger breadth is being planted every succeeding year. It is now high time they were off the ground and in the camp, or they may suffer from frost. As the cut of grass for hay was this summer heavy, and a large portion secured in excellent condition, there is an abundant stock of this kind of fodder for winter use; and we hope no great deficiency of roots will be experienced. The accounts respecting potatoes are rather conflicting; but this arises from the disease attacking some localities in a greater degree than others, and in some cases the loss will be serious: but the breadth planted was extensive and the crops generally good, so we trust there will be an adequate supply of this indispensable and valuable edible. Wool has supported its price steadily since shearday, and good lots are now worth fully 40s. per tod. Our labourers are generally well employed; there may be a few of inferior kind out of work, and the wages range from 10s to 13s. per week, according to merit.—Nov. 21.

SOMERSETSHIRE.

For the year 1856, we have to record as fine a seed time as can be remembered; rather too dry, if anything, for wheat-sowing, but everything that could be desired for preparing the land, &c. Some of the early-sown wheats are looking well, but it lies long on the ground, from not being wet enough. Since a fine shower we had this week, it has come up quicker. Seed-time for autumn-sowing is now nearly over, and mangolds and other roots that will injure from the frost should be secured. Mangolds are fine, swedes better than expected; but excepting mangolds, the root crop, in quantity, is not equal to last year. There are not so many winter beans put in as usual; the growth of them are lessening. Vetches are looking well; a good many put in. Our pastures have done very well this year in produce, and as yet very little hay has been consumed. Our markets and fairs are not abundantly supplied with fat stock; that which is turned out good meets with ready sale. The quality of mutton is rather better than beef. Fat cattle, having been turned out as soon as fit, yields a good price. There is no reserve, and our Christmas markets do not appear likely to be over-supplied with extra stock. Prices have been maintained, on the whole, this autumn better than was expected: Beef, 9s. 6d. to 11s. per score; mutton, 6½d. to 7d. per lb.; pigs, 10s. 6d. to 10s. 9d. per score. Stock sheep, without being a very quick sale, have maintained their prices very well, and the fairs have been pretty well cleared. There has been a fair sale of poor cattle, at good prices. We have had a longer dull time in the corn trade than for years, prices gradually getting down this month, which is very unusual, although the condition has improved, from the dry month we have had. Best white, 63lbs., has come down from 9s. to 8s. 3d. and 8s. 6d.; red, 8s. 6d. to 7s. 9d. and 8s.; secondary red, after the rains, 62lbs., 7s. 6d.; inferior, 60 to 61lbs., 7s. to 7s. 3d.; unsound white, 6s. to 7s. 6d.; light red, 57 to 58lbs., 6s. to 6s. 9d.; 60lbs. flour from 50s. to 46s., with a press of sellers and shy buyers, bakers having short stocks. There has been, it appears, a large delivery of wheat and barley, and much more disposition to flail out than last year. There are some complaints of deficient crops, and the reverse; but, on the whole, not equal to last year. Barley at one time was thrashed freely, the price tempting; but it has lately been a bad trade, going down from 6s. 6d. to 5s. 6d. and 5s. 9d., extra 6s. Beans were much inquired for a month since; the prices have been dull since: new, 5s. 3d. to 5s. 6d., old, 6s. to 6s. 3d.; boiling peas, 8s. to 8s. 3d. There has been a slackness in the cheese trade, with falling prices. Very little doing in wool. Potatoes, which have gone off much since digging, are rating from 8s. 6d. to 9s., extra 10s., per 240lbs.

MID KENT.

It is somewhat unfortunate that this district produces so little of the most important articles of daily use—"corn and cattle." Useful as fruit and hops are, as administering to the comforts of the community at large, there are seasons in which these productions are anything but remunerative to the grower: and the past has been one of these seasons. For fruit we had none, or next to none, of the large orchard kinds; and, though hops have been plentiful enough, the low prices realized has made them almost as great a failure as the fruit; for the large growth of 1855 has not been more than half consumed—many growers still holding their whole stock of that year, with but a poor prospect of selling at all, while the demand for those of 1856 has been limited, so that many growers not compelled to sell out, have them still on hand, and are likely to keep them for some time yet. This complication of evils necessarily presses on all parties. A large grower near here holds about 130 tons of hops of 1855, and I believe about 100 tons of the present year. Many others on a less extensive scale are similarly situate, that the spirit of enterprise is certainly checked for the present, and the present winter will most likely witness but little addition to the breadth of fruit of hop plantations, while in both there will be a considerable reduction. This state of things is fortunately confined to the hop and fruit growers: those who have made corn and cattle their more especial object have no reasons to complain; but this class is more towards the eastern part of the county, where the crops of grain are generally good, and this season it was got together in pretty fair condition; but the yield has not been so bountiful as in 1855, neither has the quality, but being mostly well harvested, there is not much to complain of that way. Grass certainly has been more plentiful this season than in any for a great number of years, and the autumn has, on the whole, been favourable for turnips and other green crops; but swedes are not generally good. Mangold wurtzel is better, while turnips sown early are generally good and large; but late or stubble turnips are backward. Notwithstanding the fine growing season they have passed through, the lateness of sowing could not be made up by the subsequent growing weather; but as a whole the turnip crop may be regarded a tolerably good one. Potatoes have turned out badly—the crop being poor in the first place, and of these, full one-fourth were diseased. This is unfortunate, as a larger breadth was planted this year than last, owing to the comparative slightness of the disease in 1855; but the present year has damped our hopes again of getting rid of this strange misfortune; but since the crop was housed the disease does not appear to have advanced any, and the quality is generally good. I am sorry to inform you that an aggravated kind of foot-rot has broken out in many of the largest flocks of sheep. I have in a flock of about 400 nearly one-fourth more or less lame, and I and several others are in a like predicament. This is different from the disease which carried off so many lambs last winter, which was more a complaint in the liver—reducing the animal to a weak poor state, while many sheep keep and even improve in flesh while affected with foot-rot when the latter is not so very severely attacked: but it is annoying to observe so many sheep lame, and no remedy hitherto tried has been able to overcome it entirely, and but few has done any good. Notwithstanding the depressed state of the market for hops, it is gratifying to find that but few labourers are unemployed. The favourable state of the weather, added to the demand there has been for labourers in other counties, has led to many of them transporting themselves to this district; but it is feared if hard weather sets in there will be much distress amongst the working-classes: but we must hope for the best.—Nov. 13.

WEST GLOUCESTERSHIRE.

The last month has been without exception, taking into consideration the season of the year, the most favourable for agricultural operations, of which more than thirty years' observation affords not a more glorious antecedent. Indeed, since harvest there has been very little interruption occasioned by the elements; and it would be gratifying in the extreme if that important period could be referred to with reminiscences equally pleasing. The inferior condition of many samples of grain offered at market affords unimpeachable testimony of the effects of a superabundance of rain at that critical period, and the mischief which it produced has been more extensive than was anticipated. It has not only deteriorated the samples, but reduced the bulk. Referring to this period last year, grave apprehensions were extensively circulated that the produce of the harvest of 1855 would not hold out till the succeeding one—apprehensions with which I never could participate. Alarmists contended that the probable imports would be insufficient to make up the usual deficiency, and the prospect of famine was all but foretold. Providence kindly ordered it to be otherwise; but there is good reason for the supposition that a greater quantity of grain will be required from foreign sources than was the case last year. The reasons are obvious. The sad condition of the potatoes is too unequivocally corroborated to leave a doubt. I have withheld unqualified remarks on this important, though melancholy fact, till I could feel myself justified by speaking in positive terms. At the early part of the season for taking them out of the ground, symptoms were equivocal; the tubers gave evidence of disease, and there appeared a doubt whether the keeping properties of the early sorts were not deteriorated in consequence of their having come to maturity during the dry weather, which being succeeded by an abundance of rain, caused them to send forth premature shoots. This was referred to in the report on the 15th of September, and, unhappily, the preconception is too seriously corroborated. As an instance which has come under my own observation, last week a bury was opened containing fourteen sacks, only five of which were in a marketable condition; and had they remained a short time longer, in all probability they would all have become worthless. Other instances nearly as disastrous are spoken of. This disease is, in truth, most inexplicable: physiologists have on some occasions endeavoured to assign the cause to electricity; but that theory is entirely confuted by the experience of the past season. In this district during the whole summer there was scarcely a trace of a thunderstorm—none to be compared with what is usually experienced. A preventive of the disease appears a forlorn hope, but a palliative will not be out of season. I have invariably noticed that potatoes planted in land to which manure is applied at the time, have suffered from the disease most extensively. The plan is, I know, recommended by some; but it cannot be too strongly discouraged. In fact, applying manure from the farm-yard to any crop immediately at the time of consigning the seed to the earth is a bad practice. To produce the best effects it should be worked into the land some weeks previously, especially for turnips, by which mean s the ravages of the fly will to a very great extent be obviated. For potatoes also the manure should be dug or ploughed in at this season of the year—the land was never in a better state than it has been during the last four or five weeks. A compost of lime and soil should be prepared as a slight covering for the sets. Without going so far as to assert that this plan will entirely avert the disease, the advantages attendant upon this practice induces me urgently to recommend its adoption. Since the commencement of October we have had but little rain in this quarter; and, compared with other parts, but little fog. Dull mornings and evenings have usually been favoured with intervals of sunshine; and on many days it could scarcely have been supposed that the month of September had passed away. There have been sharp frosts on several nights, with occasionally brisk winds from the north. Wheat sowing has been most successfully proceeded with, but is not yet completed, tempting and favourable as the weather has been for the purpose. It is usually procrastinated in this district from a prevailing impression that early sowing is not desirable. The crops of mangel wurzel, which are invariably good, are most of them gathered in. The swedes and turnips in some parts do not look quite so promising as they did last month; nevertheless, there is a good supply. The too abundant application of artificial manures, to the exclusion of farmyard dung, is the assignable cause for some of the crops appearing less favourable than they did. Agriculturists are becoming convinced of this, and are directing more than ordinary attention to the cultivation of their best friend, the old-fashioned farmyard dung-heap. There is, nevertheless, a great abundance of winter keep. The grass-lands still continue to supply stock with more food than usual at this period of the year; and as the land is in such a dry and favourable state, the damage generally caused by poaching is not observable. It is pleasing to learn that the produce of the grass-lands in other districts is so highly spoken of, and that the cold soils of Carmarthenshire have been equally favoured. We must, however, anticipate a change of the atmosphere ere long; and we may have a severe winter yet. Advices from Russia report that the frost has set in with great intensity; and England may soon be visited by similarly seasonable actions. One of the staple productions of this county—fruit—is a decided failure. Many growers who usually calculate upon making 100 hogsheads of cider, will not make two, and some will not make any at all. This, with the high price of barley, cannot fail to be felt. Stock of all kinds keep up in price, especially pigs, which are extravagantly dear. Taking into account the value of all descriptions of grain calculated for feeding purposes, it is difficult to conceive how a margin of profit can be anticipated.—Nov. 21.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ANDOVER SHEEP FAIR.—Full 15,000 short were penned, compared with last year. The attendance of dealers was numerous, and, from the short supply, sales were easily effected, the greater portion being cleared before eleven o'clock; and at the close of the fair but few remained unsold, which were of an inferior description. The following are the prices realized, viz., ewes 36s. to 44s., lambs 28s. to 36s., wethers 32s. to 50s. There were some very superior lambs of Messrs. Strange and Walter Pothecary, which were greatly admired, the former realizing 44s., and the latter over 40s.; and, from the fineness of the weather, the sheep were seen to the best advantage. The pig market was well supplied, and although prices ruled high, a good trade was done, whilst that of horned cattle was unworthy of notice, the supply being very limited. Good cart-horses were in request, and obtained very high prices, and a good business done.

BRECON FAIR was very numerously attended. Horses sold exceedingly well. There was not so large a supply of stock as we have seen, but a brisk demand for what was exhibited. Cheese and butter were higher than for some time past. Good skim cheese fetched 6d. per lb., and butter reached as much as 1s. 2d. per lb.

CARMARTHEN NOVEMBER FAIR was held on the 14th and 15th instant. The show of small store cattle on offer was a fair average one, and although a large number of buyers were in attendance, business was very languid at lower prices. The few three and four-year old oxen shown were sold at very fair rates; fat cows and cows with calves continue to be sold without any alteration in value. There was a fair number of horses and colts for sale, and many were disposed of at barely late rates. The annual hiring fair for the surrounding district was held in this town: the wages demanded and obtained were much higher than on any former occasion, particularly by farm servants. A very large number of pigs were shown, but in consequence of the very high prices demanded it was a slack fair, although many of the best quality sold at 6½d. per lb. dead weight.

DONCASTER FAIR.—The show of stock, as a whole, was larger than ever known, especially of young grazing steers. For really good lots, either of steers or heifers, there were plenty of customers, and although the large show had the effect of checking any enhanced value, prices were firmly supported, and most found purchasers before noon. Aged drapes and poor young lean stock were in little demand, and although offered at reduced terms, many remained unsold at the close of the fair. We had a moderate show of fat, with a good demand at full 7s. 6d. per stone for prime beasts. Good incalvers and cows and calves were scarce, and with plenty of buyers, prices were high. A tolerable show of sheep with a ready sale at full current rates. The horse fair never presented a more indifferent lot. Anything good were exceedingly scarce, and obtained fair prices. The general tendency of the fair, taken altogether, was in favour of lower prices for lean stock. Cows in calf realised 14*l.* to 20*l*; strong steers from 12*l.* to 16*l.*; heifers, 8*l.* The abundance of these animals checked sales, and the trade was slow. Milk cows were scarce and dear. There was a large show of sheep. Wethers fetched from 35s. to 40s. per head; lambs, 28s. to 35s.; and ewes, 22s. The show of horses was an indifferent one in point of quality. Anything good was picked up early; nags sold at 40 to 50 guineas each; cart-horses, 30*l.* to 45*l.*

DUNSE FAIR.—The supply of cattle was fully an average, the demand was not great, but a good many sales were made. Stirks sold from 5*l.* to 8*l.*; two-year-olds from 9*l.* to 11*l.* 11s.; three-year-olds from 12*l.* to 17*l.*; fat at from 7s. to 7s. 6d. per stone. There was no principal fat in the market. Milch cows sold from 7*l.* 10s. to 20*l.* In the sheep market there were 1,400 bred sheep, forward in condition, which sold from 33s. to 45s.; half-bred, from 24s. 6d. to 33s.; Cheviot hoggs, from 19s. to 23s.; a lot of Cheviot wedders sold for 33s.; a lot of draft ewes, from Mount Robert, sold at 44s.; greyfaced hoggs, from 10s. 6d. to 17s.; mutton, 6½d. to 7d. per lb. In the horse market there were more than an average; prices from 50s. up to 30*l.* and 40*l.*; but not much business done.

HAYWARD'S HEATH FAIR.—There was a very large attendance, but the show of stock was meagre in the extreme. But very few pigs were shown, all young ones, and were sold at dear rates. Only a few head of inferior stock were offered, and scarcely any business was transacted.

HEMPTON GREEN FAIR, NORFOLK, Nov. 20.—At this important fair, which lasted two days, there was a great falling off both as to numbers and the general condition of all breeds of cattle; in fact, a poorer show has not been known for years. The weather was remarkably fine, keep very plentiful, and buyers tolerably numerous, which caused it to be termed a good selling fair, although little profit to breeders and dealers. Prices as follows: Scots, for nine and twelve months' keeping, 3s. 6d. to 4s. 6d.; shorthorns 3s. to 3s. 6d., fresh in condition, 4s.; Irish, 3s. to 3s. 6d. Devons, the fewest known for years, 3s. 6d. to 4s. per 14lbs. when fat; at the prices nearly a clearance was effected at the close of the second day. It being considered a store cattle fair, no sheep were penned worth notice. Very good horses; high prices obtained for first-rate animals.

ILSLEY SHEEP FAIR.—The supply of sheep was below an average, but there was a good attendance of dealers. The trade was lively, and business was done at an advance of 2s. to 3s. per head from the last fair. Mr. Witts, of Leckhempstead, had a pen of superior lambs which commanded attention, and they were purchased by E. Tull, Esq., of Peasemore, at upwards of 40s. each.

LAUNCESTON ST. LEONARD'S FAIR was held on Monday, the 17th instant, and presented, as usual, one of the best lots of Devon cattle that are to be found in any part of the West of England. The graziers allow the Launceston cattle to answer their purpose better than those very pure North Devons bred in the North of Devon, being larger, stronger, and with equal aptitude to fatten. The sale was exceedingly brisk, at remunerating prices to the breeder. Fat beef, 3*l.* 3s. The prize cattle intended for Christmas markets, which were very good indeed, sold for 4*l.* per cwt.; best fat sheep sold at 6¼d. per lb.

NEWCASTLE-EMLYN FAIR was held last Saturday. Cattle and horses were of a slow sale. From 40 to 50 cows and heifers were brought here direct from Ayrshire of that breed, and sold in the afternoon by public auction, which fetched high prices—the first lot being a two-year-old heifer-in-calf, and was knocked down for £23 10s.

PICKERING FAIR.—There was an unusually large supply of all kinds of cattle, and a good attendance of buyers and dealers. Considerable business was done, prices ruling somewhat heavier than at last fair, except for milch cows, which were in great request, at much higher prices. Fat beasts sold at from 6s. 6d. to 7s. 3d. per stone. A considerable quantity of sheep were shown, and sold pretty freely, at 6d. to 6½d. per lb.

SHIPSTON-ON-STOUR FAIR.—There was a large attendance of dealers, and a good supply of all descriptions of stock; a brisk trade was transacted at high prices, especially in store kind; mutton realized from 6d. to 7d., and beef 6d. to 6½d. per lb.

TRURO FAIR.—There was the smallest number of sheep of all descriptions that we have seen for many years; and the demand was very great, fat sheep selling at 6d. and 6½d. per lb.; breeding ewes at about recent prices. Of bullocks there was a very small supply from farmers of the neighbourhood; but there was a great number brought from the eastward by the dealers. There was a very great demand, and the sale was one of the best that had been known at this fair for many years, and prices had an upward tendency.

WIRKSWORTH FAIR.—There was a rather better show of cattle than usual, and anything in milk or at good note commanded high prices, while other kinds of this description of stock were looking up. In sheep there was no alteration in value, except that a few black-faced ones moved off rather high. Pigs, but few; suckers from 9s. to 14s., those about twelve weeks old as high as 20s., with but little business done. On the whole the fair may be called a brisk one.

YEOVIL FAIR.—The sheep were placed in the fair-field, and about 5,000 were penned. The business was active, and prices advancing. Wethers may be quoted at 30s. to 42s. each; ewes, 27s. to 38s. The cattle fair was held in Back Kingston, and was well supplied. Sales were briskly effected, the price of beef of good quality being 10s. to 11s. a score. The number of horses was small, and the quality but poor, though there were a few tolerably good animals. The business in this part was but slow.

IRISH FAIRS.—BALLINAKILL: Purchasers were numerous, and almost every beast on the ground changed owners, bringing what may fairly be termed "war prices." The best fat cows averaged from £14 10s. to £16, inferior £9 to £10 10s.; two-year-old heifers £10 10s. to £12, and bullocks of the same age fetched £13 10s. to £15. In one instance £24 each was obtained for four store bullocks; yearlings £6 10s. to £8, weanlings £3 to £3 15s.; new milch cows £14 10s. to £16, springers £12 to £13 10s.; best fat sheep 38s. to 42s., inferior 28s. to 34s.; lambs 22s. to 28s.; prime fat pigs 58s. per cwt., shipping do. 55s.; stores, 56s. to 65s. each; bonhams, 40s. to 48s. per couple. There was a large supply of horses, and good prices were obtained, even for those of a middling description. CARLOW:—Store cattle were in demand, and brought high prices. Fat bullocks were sold at from £15 to £18. Twenty heifers, two-and-a-half years old, were sold at £15 per head—considered the best lot in the fair; also five cows at £16 each. Two fat cows sold at £20 each. A lot of light two-year-old bullocks, fourteen in number, sold at £8 15s. per head; also a lot of ten two-and-a-half-year-old heifers at £10 15s. A fine lot of twenty three-year-old bullocks, in prime condition, were readily purchased at £16 per head; a second lot at £14 15s. per head; some milch cows at £16 each, and ten three-year-old heifers at £13 15s. per head. Mr. Dowse also sold some fine wedders at 49s. each—considered a prime lot. Mr. H. H. Cooper, of Shrule Castle, obtained 41s. for a lot of thirty-one hoggets; and Mr. Lacy, of Carlow, purchased a fine lot of wedders from Mr. T. F. Gale, at 42s. 6d. each. The general average price of fat sheep was from 35s. to 45s.; lambs, from 20s. to 26s.; store sheep, from 30s. to 35s.; bullocks, two-year-old, from 10*l.* to 14*l.*; yearlings, from 4*l.* 10s. to 6*l.* 10s.; two-year-old heifers from 8*l.* to 10*l.* Fat pigs brought fabulous prices. Bonhams from 26s. to 33s., and in some instances 35s. each.

CHIPPENHAM MONTHLY MARKET.—Broad doubles, 54s. to 62s.; prime Cheddar, 60s. to 71s.; thin, 48s. to 56s.; loaves, 60s. to 70s.; skim, 30s. to 34s. per cwt. Our market was well attended by both buyers and sellers. About 300 tons of cheese were pitched, nearly the whole of which changed hands at a reduction of from 2s. to 3s. per cwt. on last market's prices.

GLASGOW, (Wednesday last.)—There were 8 carts, and through the weigh-house 15 tons cheese; first class, new, 62s., second class, 54s., skim milk, 33s.

GLOUCESTER CHEESE MARKET was well supplied, about 150 tons of Cheese being pitched. The parcels were in good condition, and found buyers at about the prices of last market; but a few lots of inferior quality were taken away unsold.

SALISBURY.—The pitch consisted of upwards of 300 tons of excellent cheese. The attendance of buyers was good; but, notwithstanding this, a great deal remained unsold, although a decline of from 2s. to 3s. per cwt. took place on all sorts. The following are the quotstions: Cheddars, 74s. to 78s.; cowards, 58s. to 64s.; Somerset half cowards, 50s. to 56s.; skims, 25s. to 30s. per cwt.

POTATO CHEESE.—Take the best potatoes and boil them; when cold, beat then in a mortar into a pulp, adding a pint of sour milk to five pounds of potatoes. Keep the mass covered for three or four days and beat it again. Make it into small cheeses, which are to be placed into baskets to let the superfluous moisture escape. Dry them in the shade, and then pile them on each other for fifteen days; after which they may be put in any manner in a dry place. They have a very pleasant flavour, and will keep good for years, improving with age.—*Literary Gazette.*

REVIEW OF THE CORN TRADE.

DURING THE MONTH OF NOVEMBER.

Wheat sowing during the past month has proceeded very satisfactorily, from the dry state and good tilth of the land. The southern counties may be considered as having completed this important work; while the northern portions of the kingdom, with more to do, are still favoured as respects the time, the recent sharp frosts and subsequent changes being all beneficial. The complaints of inferior condition in the several markets have found some abatement, but they have still been sufficient to produce great heaviness in sales, with declining prices; the ample supplies of foreign, chiefly Russian, and lately American, making millers somewhat independent of home markets. The weekly sales being almost invariably less than last year, show that it has not been the quantity offering that has lowered rates, but the condition alone. The best samples only recently have sustained a serious decline, produced partly by the widening difference of prices between them and the lower kinds, and partly by the more abundant choice of good quality foreign: the fall may be considered generally as amounting to between 4s. and 5s. per qr. in the month, foreign having scarcely given way more than 2s. to 3s. per qr.; the lower kinds having been in extensive demand for Spain and Portugal. The French markets have exhibited but little change in rates; the tendency, however, has been downwards, especially at Paris, to the extent of 2s. to 3s. for select parcels. The sudden appearance of 10 degrees of frost in the Baltic on the 10th ult. threatening an early closing of this sea, lowered prices in the Prussian shipping ports, holders being anxious to quit rather than hold over till spring. At Rostock 55s. was the price of red 60lb. wheat for first open water. At Hambro' the same effects have been produced, while the Dutch and Belgian markets have been gradually reducing prices. Italy, notwithstanding a spurt given to the wheat trade by the shipments to the Peninsula and Marseilles, has also gone back, and some holders there unused to such rates have been expecting to return to a normal state. Consumption had greatly lessened in Tuscany from the pressure of high prices; Ghirka wheat at Leghorn having declined 8s. per qr., though still quoted 58s. 6d. per qr. The eastern markets have lost the late excitement. Odessa now quotes 60s. per qr. for the best samples. With a stock of about 200,000 qrs., chiefly soft Polish, at Galatz and Ibraila, stores were accumulating, but not to a sufficient extent to load the vessels waiting; the price of the best Galatz was about 54s., with a freight of 8s. per qr. Very large shipments had been made at Alexandria, but that quality was below an English consumption. The country of most interest was the United States, whence unprecedented shipments were making, both the new wheat and flour being of fine dry quality, and calculated to make up for our own deficiencies as respects condition. The best red southern wheat at New York was worth 53s. 6d. per quarter, and the best white 56s. 9d., and the finest Flour 33s. per brl., or about 47s. per English sack; so that should our own prices hold good, there will still be encouragement to ship. The first Monday's market in London opened on good supplies: though among those of English growth very few samples of fine were exhibited, these sold slowly at former prices; but inferior, though offered at a reduction of 1s. to 2s. per qr., were passed over to the next day. Foreign, however, was not cheaper, and some inferior kinds brought 1s. per qr. more money for Spain. To this report the country generally replied in the same way, some markets dropping the distinction of quality in quoting the reduction, which was exceeded at Spalding, where the fall was quoted 2s. to 3s. per qr. Liverpool in the course of the week fell 3d. to 4d. per 70lbs. on American samples. Scotland was equally affected in prices, and Ireland slightly so. The second Monday's arrivals were also good, but the morning's show from the near counties was scanty, and the condition unusually bad. The market occurring on a civic holiday was very dull, and the few fine samples offered, with difficulty obtained the previous prices, inferior experiencing a further decline of fully 1s. per qr. The country markets held in the course of the week generally reported a reduction of 1s. to 2s. per qr., Liverpool lowering rates 1d. to 4d. per 70lbs.; both Scotland and Ireland being in sympathy with English advices. The third Monday was again well supplied, the great bulk of the foreign being from Russia. With a fair supply for the morning from Kent and Essex, and the condition improved by frost and dry weather; a better trade was found; but ill-conditioned samples were still left on hand. Foreign prices were well sustained, without much passing. The country markets this week showed more dulness than London, the rates generally being lowered 1s. to 2s. per qr. Liverpool experienced a brisk trade, but at a reduction, on Tuesday, of 2d. to 4d. per 70lbs. on wheat; the decline not being increased on Friday. The fourth Monday gave a market unusually full of grain, the foreign wheat supplies being greatly augmented from America and Egypt, though the morning's samples from Kent and Essex were scarcely the average of quantity. This day showed the effect of the continual reductions reported on inferior qualities, as there were many samples showing in improved condition; but the offers of millers were so much below factors' expectations for such, that early in the day they were refused, and only as the market was well advanced was there a disposition to quit at 3s. to 4s. per qr. less for the finest lots; but holders were too late in their decision, for at a late hour scarcely any samples had been cleared from the English stands; while to sell foreign in retail it was equally necessary to accept a decline of 2s. per qr.

The general averages only indicate a fall of 2s. per qr. for four weeks, commencing at 66s. 4d. and closing at 64s. 4d.; but as they represent what has passed a fortnight back, there is no real discrepancy in the varying appearances. The London averages even show an advance for the month of 9d. per qr., commencing at 71s. and closing at 70s. 3d.; but it must be remembered that only about half the reported weekly arrivals appear in these averages, a circumstance that seems to require investigation. The foreign arrivals into the principal ports of Great Britain for the four weeks ending the 12th of November were 419,739 qrs. in wheat and flour. The shipments of wheat from St. Petersburg for the season have been 389,125 qrs., of which London has received 191,886 qrs. The total foreign supply for four weeks to the 24th of November for London was 101,779 qrs., the English amounting to 39,792 qrs.; which shows a weekly supply less by about 3,000 qrs. than October for home growth, while the foreign is about the same as then. The exports, chiefly to Spain, in four weeks were large—viz., 23,183 qrs. wheat, and 1,368 sacks of flour. The fluctuations in flour during November were unimportant; town samples being made of the finest quality of English and foreign wheat, which only found a material abatement at the month's close, have not at all varied, remaining at 60s. per sack. American not being in heavy supply, and the late arrivals of new being much in esteem, gave way only 1s. per brl. on the last Monday, the top price of good quality being 39s. per brl. In country samples there has been some change. The first Monday noted an advance of 1s. per sack, the second and third noted a decline of 1s. each per sack, and the fourth, with a very heavy market, lowered prices 2s. more, making the decline through the month 3s. per sack. The last supply of Norfolks was the greatest, and the superiority of the new American almost placed this quality aside. The quantities received in London during the month have been as follows—country, 65,402 sacks; foreign, 2,734 sacks and 22,983 brls.: the only increase over the former month being 1,100 sacks and 9,500 brls. of foreign.

Barley, as respects the finest quality, has undergone little change; but the secondary and lower kinds of foreign have fallen fully 5s. per qr. The first Monday, with limited supplies, left the top price unchanged, though scarcely enough fine malting appeared to keep up the quotation of 50s., stained, damp and unsweet parcels giving way 1s. to 2s. per qr. A similar state of trade for the following two successive Mondays obtained; but on the last the finest malting was generally quoted 1s. down, and all other sorts—especially thin foreign, which abounded—was 2s. lower. The late high rates of this season have greatly increased the consumption of maize, which commenced the month in retail demand at 35s., and closed with cargoes afloat at 37s. per qr. The supplies of barley, both English and foreign, have steadily increased. London, in the course of the month, has received of home growth 26,904 qrs., and of foreign 29,564 qrs.; making the week's average supply 14,100 qrs., or twice the quantity received in October.

Malt has slightly receded in value—being a very dull sale all through the month; but the fall has only been about 2s. to 3s. per qr.

Very few English oats have yet come to market since harvest, and still fewer Scotch—these latter, when new, appearing almost as damp as grains. The Irish supplies, too, were very moderate up to the fourth Monday, when they became very heavy to the damage of importers, as arriving after some full markets of foreign they suffered in value. The foreign supplies have been chiefly from Russia, with quite a sufficiency of low Dutch new, which, being spongy and bad-conditioned, have constantly produced heavy markets. Through the month good sweet old Russian oats have scarcely been reduced over 1s. to 1s. 6d. per qr.; but inferior new have sold with difficulty at twice the reduction, and coming at last in quantities, have been obliged to go to store—many of them for the want of buyers. The first Monday was cheaper by 6d. per qr. for old descriptions and 1s. lower for new, though arrivals then were only moderate. On the second Monday good old kept their price, but new were further reduced 6d. per qr. On the third Monday the general reduction was 6d. to 1s. per qr.—the extreme fall being limited to new inferior samples; but on the last Monday, when

40,000 qrs. from Ireland came with a good foreign supply, the market was fairly overdone, and a further reduction ensued of 6d. to 1s. per qr. on samples of old, and of 1s. 6d. to 2s. per qr. on inferior new. As the Russian supplies, however, must now fall off, we think it probable that the discouragement attending the first free Irish shipments will have the effect of lessening supplies thence, and produce some reaction in the rates, which, compared with wheat and other grain, are moderate. The month's arrivals into London have been as follows:—English 4,012 qrs., Scotch 315 qrs., Irish 56,302 qrs., and foreign 116,683 qrs., which, as compared with last month, shows a decrease of home-growth to the extent of 5,923 qrs., an increase of Irish of 29,028 qrs., and about the same supply of foreign as in October.

The prices of beans maintained an equal course up to the fourth Monday, when new samples suffered a serious decline, appearing in some quantity and out of condition. The first and second Monday only noted a rise of 1s. per qr. in Egyptian, from their scarcity. The third Monday noted a fall in new English of 1s. per qr., and the last Monday was 3s. to 4s. per qr. cheaper for new beans and 1s. to 2s. per qr. lower for old. Alexandrian shipments having commenced to arrive, trade is no longer shut up to English supplies, and the high rates lately obtained, after a good crop has been announced, are not likely very soon to be resumed. The imports into London for November were 3,117 qrs. English, and 4,630 qrs. foreign. This is rather a decrease in native supplies; but 4,410 qrs. more in foreign, as in October the whole foreign receipts were but 240 qrs.

Peas, as well as other grain, have undergone some change in favour of buyers. The imports being exclusively limited to samples of white boilers, the English supply has been, in London, 3,354 qrs., and the foreign 1,890 qrs., which is altogether only 940 qrs. over the arrivals in October. The only change experienced was a fall, on the fourth Monday, of 1s. per qr. in hog peas, both maple and dun, and 1s. to 2s. in boiling qualities.

Linseed, with moderate supplies till the fourth week, which only brought the month's imports to 16,360 qrs., has steadily maintained its value, the local as well as foreign inquiry being well kept up, and cakes having remained in fair demand for cattle-feed, at full prices. The supply of French red cloverseed as yet has been unusually short, only about 700 bags, instead of 10,000 bags received about this time last year. The doubts as to the state of our own crop appear to have made dealers unusually reserved, especially as Bordeaux houses still demand high prices, upon an alleged scarcity there—say 68s. per cwt., free on board. Scarcely an English sample appears; and it is feared that much of the crop will turn out of the cosh discoloured and inferior, though there is some fine maiden seed. White seed, quoted extravagantly high at Hamburgh, is neglected. Trefoil has been steady. Canaryseed has somewhat given way—say 2s. to 4s. per qr. Hempseed has also receded in value to about the same extent, from heavy arrivals. Mustardseed has been without favour, though held at unaltered rates. Winter tares find but a limited inquiry, at unchanged quotations. Rapeseed, coriander, carraway, &c., much as last quoted.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter.

WHEAT, Essex and Kent, white, new 54 to 67 extra — to 74
Ditto, red .. „ 53 60 — 67
Norfolk, Linc. and Yorksh., red „ 52 60 — 67
BARLEY, new, malting.. 36 39 .... Chevalier.. 40 48
Distilling .... 37 38 .... Grinding.. 31 33
MALT, Essex, Norfolk, and Suffolk.... 67 72 — 77
Kingston, Ware, and town made.. 69 73 — 79
Brown .... 63 64 — —
RYE .... — — 38 42
OATS, English, feed.. 24 25 ...... Potato 25 31
Scotch, feed .... 26 30 ...... Potato 27 32
Irish, feed, white .... 21 24 fine — 25
Ditto, black .... 19 20 „ — 22
BEANS, Mazagan, new 34 36 ...... Ticks, new 35 37
Harrow........ 40 44 ...... Pigeon 44 47
PEAS, white boilers 41 47.. Maple 42 43.. Grey 40 41
FLOUR, per sk. of 280 lbs., Town, Households 58s., fine 59 60
Country 44 45.......... Households...... 48 50
Norfolk and Suffolk, ex-ship 43 44

FOREIGN GRAIN.

Shillings per Quarter.

WHEAT, Dantzic, mixed.. 75 77 high do. — 80 ext. — 83
Konigsberg .... 73 77 „ — 77 — 81
Rostock .... 72 76 fine.. — 80 — 83
American, white .... 64 70 red.. — — 60 65
Pomera., Meckbg., and Uckermrk., red 71 75 73 77
Silesian, red .... 66 71 white — — 71 75
Danish and Holstein 63 67 65 70
St. Petersburg and Riga .... 53 57 fine 57 64
Rhine and Belgium .... — — — —
Russian.... 57 66 .... French.... (none)
BARLEY, grinding 25 32 .... Distilling.. 34 37
OATS, Dutch, brew, and Polands 24 30.. Feed 20 25
Danish and Swedish, feed.. 21 26.. Stralsund 25 27
Russian.. .... 22 23
BEANS, Friesland and Holstein.................. 40 44
Konigsberg .. 37 44 .... Egyptian.... 36 37
PEAS, feeding .... 40 41.. fine boilers 42 46
INDIAN CORN, white .... 34 35.. yellow .. 32 35
FLOUR, per sack...... French 58 —.. Spanish .. 56 57
American, per barrel, sour 30 32.. sweet 35 39

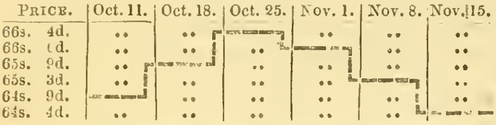
IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley		Oats.		Rye.		Beans		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Oct. 11, 1856 ..	64	9	42	9	25	9	39	11	45	2	43	3
Oct. 18, 1856 ..	65	9	41	0	26	8	40	1	46	1	44	0
Oct. 25, 1856 ..	66	4	45	8	27	1	40	11	46	6	44	9
Nov. 1, 1856 ..	65	0	46	2	26	7	41	8	47	2	45	5
Nov. 8, 1856 ..	65	3	46	8	26	5	40	4	46	0	45	9
Nov. 15, 1856 ..	64	4	46	7	26	2	41	7	47	3	43	2
Aggregate average	65	5	45	4	26	5	40	9	46	4	44	5
Same time last year	78	4	39	0	28	3	51	1	50	11	49	11

COMPARATIVE AVERAGES—1856-55.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1855.		s.	d.
Wheat ...	109,942 qrs.,	64	4	Wheat....	126,465 qrs.,	80	10
Barley....	98,060 ..	46	7	Barley....	96,931 ..	39	11
Oats	14,399 ..	26	2	Oats	19,029 ..	28	0
Rye......	189 ..	41	7	Rye......	289 ..	52	10
Beans....	5,210 ..	47	3	Beans....	5,495 ..	52	0
Peas	3,298 ..	43	2	Peas	2,651 ..	50	4

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



MONTHLY RETURN.

An Account shewing the Quantities of Corn Grain, Meal, and Flour, imported into the United Kingdom, and admitted to Home Consumption, in the month of October, 1856.

Species of Corn, Grain, Meal, and Flour.	Imported from foreign Countries.			Imported from British Possessions out of Europe			Total.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat	404563	4		30128	0		434 91	4	
Barley	113182	0		..			113482	0	
Oats	139870	5		..			139870	5	
Rye	6083	1		1	4		6 84	5	
Peas	1707	2		2398	5		4105	7	
Beans	61 7	1		..			6197	1	
Maize or Indian Corn ..	147664	1		44 2	2		152 66	3	
Buck Wheat	..			..			..		
Beer or Bigg	..			..			..		
Total of Corn and Grain	819567	6		36930	3		856498	1	
	cwts.	qr.	lb.	cwts.	qr.	lb.	cwts.	qr.	lb.
Wheat Meal and Flour .	124464	2	11	36743	3	16	161213	1	27
Barley Meal	0	0	25	..			0	0	25
Oat Meal	4	2	8	1	0	0	5	2	8
Rye Meal..............	479	0	6	..			479	0	6
Pea Meal..............	..			..			.		
Indian Meal	290	0	25	1	0	0	291	0	23
Buck Wheat Meal......	3	3	0	0	2	12	4	1	12
Total of Meal and Flour	125212	1	17	36751	2	0	161993	3	17

PRICES OF SEEDS.

Tares, winter (per bushel)............	5s. 0d. to 6s. 0d.
Coriander (per cwt.)......................	20s. to 24s.
Canary (per qr.).............................	72s. to 78s.
Carraway (per cwt.).... new —s. to 50s., old	—s. to —s.
Linseed (p. qr.) sowing —s. to —s., crushing	63s. to 65s.
Linseed Cakes (per ton)..........	£10 10s. to £11 5s.
Rapeseed (per qr.)	new 86s. to 88s.
Ditto Cake (per ton)	£5 0s. to £5 10s.

FOREIGN SEEDS, &c.

Tares, old (per bushel)	5s. 0d. to 5s. 6d.
Hempseed, small, (per qr.) —s. 42s., Ditto Dutch,	44s.
Coriander (per cwt.)......................	15s. to 20s.
Carraway	42s. to 46s.
Linseed (pr qr.) Baltic, 61s. to 63s.; Bombay,	62s. to 64s.
Linseed Cake (per ton)..........	£11 0s. to £12 0s.
Rapeseed, Dutch	80s. to 84s.
Rape Cake (per ton)................	£5 0s. to £5 10s.

HOP MARKET.

BOROUGH, Monday, Nov. 24.—Our market has been moderately active since our last report with a fair demand for choice coloury samples at about last week's currency. We continue to have a steady trade for fine yearling.

POTATO MARKETS.

SOUTHWARK WATERSIDE, Monday, Nov. 24.—During the past week the arrivals coastwise have been very limited, and rather short by rail; still the trade is dull at the following quotations:—

York Regents	70s. to	110s.
Kent and Essex ditto	85s.	110s.
Lincolnshire ditto..............................	50s.	100s.
East Lothian ditto	80s.	110s.
Perth, Forfar, and Fifeshire ditto	40s.	95s.
German Whites	80s.	90s.

COUNTRY POTATO MARKETS.—York, Nov. 15: We had a fair supply of Potatoes. They sold at from 7d. to 8d. per peck, and from 2s. to 2s. 6d. per bushel. Leeds, Nov. 18: We had a moderate show of Potatoes, which sold readily at from 9½d. to 10½d. wholesale, and 10d. to 11d. per 21lbs. retail. Malton, Nov. 15: A moderate supply of Potatoes sold at 12d. per peck. Richmond, Nov. 15: Potatoes, 3s. per bushel. Manchester, Nov. 18: Potatoes, 7s. to 10s. 6d. per 252 lbs.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.
Friesland..................	112 to	116
Kiel........................	110	116
Dorset......................	114	120
Carlow......................	108	116
Waterford..................	—	—
Cork, new..................	108	116
Limerick	108	110
Sligo........................	106	117
Fresh, per dozen..	14s. 0d. to	15s. 0d.

CHEESE, per cwt.:	s.	s.
Cheshire..................	64	74
Cheddar..................	74	84
Double Gloucester........	60	70
HAMS, York 108 112.. new	102	104
Westmoreland	104	108
Irish	96	100
BACON:		
Wiltshire, dried	76	80
Irish, green	70	74

WOOL MARKETS.

ENGLISH WOOL MARKET.

Monday, Nov. 24.—The continued high value of money still operates against transactions in our market. Since Monday last the supply of wool has not increased; nevertheless, the demand has fallen off materially, and, to force sales in the present state of the discount market, lower prices must be submitted to. The prospect, however, as regards home-grown wool, is by no means unfavourable.

Per pack of 240lbs.

Fleeces—Southdown Hogs............	£18	0 to	£19	0
Do. Half-bred Hogs	16	10	16	15
Do. Kent	15	10	16	10
Do. Southdown Ewes and Wethers	16	10	17	0
Do. Leicester do.	13	10	14	5
Sorts—Clothing, picklock	18	0	19	10
Do. Prime and picklock	17	0	18	0
Do. Choice........................	15	15	16	10
Do. Super.........................	15	0	16	0
Do. Combing—Wether matching ...	20	0	21	0
Do. Picklock	17	15	18	10
Do. Common	16	0	17	0
Do. Hog matching	21	10	23	0
Do. Picklock matching............	18	10	19	0
Do. Super do.	15	10	16	0

LIVERPOOL WOOL MARKET, Nov. 22.

Scotch Wool.—There continues a steady demand for Laid Highland Wool, at the quotations; white Highland is also in request, but the best sorts are most saleable. Cheviots and Cross are only in moderate demand; but as the stocks are light, holders are firm.

	s.	d.	s.	d.
Laid Highland Wool, per 24lbs.	12	6 to	14	0
White Highland do...................	15	0	17	6
id Crossed do.. unwashed	14	0	16	6
Do. do.. washed.........	15	0	17	6
Laid Cheviot do.. unwashed	16	0	18	0
Do. do.. washed.........	18	6	24	0
White Cheviot do.. do.	28	0	32	0

FOREIGN WOOL MARKET.

CITY, Monday, Nov. 24.—The public sales of colonial wool have proceeded with firmness.

END OF VOLUME XLV.

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